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KUWAIT PROGRAMME

INFERTILITY IN KUWAIT

A CROSS-SECTIONAL SURVEY OF FINANCIAL BURDENS AND CARE-SEEKING BEHAVIOURS

Mariam Behbehani

LSE Middle East Centre Kuwait Programme Paper Series | 29 | June 2025

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Infertility in Kuwait: A Cross-Sectional Survey of Financial Burdens and Care-Seeking Behaviours

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About the Author

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Abstract

Infertility, which requires couples to rely on assisted reproductive medicine to conceive, weighs heavily on their minds, financial security, and life stability. The objective of this study is to assess the financial and socioeconomic burdens experienced by infertility patients in Kuwait. A population-based survey is conducted to examine the extent of out-of-pocket payments for treatments, and their impact on female professional performance. The sample covers couples undergoing or having undergone infertility treatments during the period 2018–2024 in Kuwait. Although the high financial costs of the standard interventions are similar among high-income countries, the current subsidisation and regulation policies in Kuwait are worsening the conditions of couples with prolonged fertility issues. The study suggests the establishment of an authority to support couples in their fertility care-seeking journey, in addition to facilitating treatment-related regulations at workplaces to protect women from penalties due to change in work patterns during treatment.

Introduction

Having children is one of the most common desired outcomes of successful marriages. For some couples, the anticipation of having a baby gets prolonged leading to the route of assisted reproductive medicine. In a clinical context, infertility is the failure to achieve pregnancy despite intentions to conceive.[1] Accordingly, the World Health Organisation (WHO) defines infertility as a disease within the male and/or female reproductive systems causing an inability to achieve pregnancy after 12 months of regular intercourse. Infertility is a global concern; its prevalence is estimated at one in six couples in the conceiving age, regardless of income level.[2]

Frustration, low self-esteem, anxiety, and similar negative thoughts dominate the psychological condition of infertile couples, affecting women drastically.[3] Furthermore, the financial and economic costs of treatments are draining, leaving couples torn between their desire to become parents and enduring costly treatment. In the conservative society of Kuwait, infertility is a socially sensitive issue with limited support for affected individuals. Research on the costs and consequences of infertility in Kuwait is rare, with only a few studies.[4]

This research addresses the knowledge gap in the financial and socioeconomic burdens of infertility from a patient perspective. To do so, a population-based survey is conducted for couples undergoing or having undergone infertility treatments in Kuwait during 2018–2024. The non-probabilistic 'snowball' sampling approach is applied, due to its viability for niche populations with an inadequate sampling frame.

We hypothesise that subsidising infertility treatment in Kuwait's private sector will have a pivotal role in improving the conditions of couples who need multiple treatment cycles. Moreover, the regulations at workplaces in support of women undergoing infertility treatments can help protect them from penalties due to changes in work patterns demanded by the treatment.

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[1] Melodie V. Borght and Christine Wyns, 'Fertility and Infertility: Definition and Epidemiology', *Clinical Biochemistry* 62 (2018), pp. 2–10.

[2] World Health Organization, 'Infertility'. Available at: https://www.who.int/news-room/fact-sheets/detail/infertility#:~:text=Infertility%20is%20a%20disease%20of,on%20their%20families%20and%20communities (accessed 19 June 2024).

[3] Arthur L. Greil, Kathleen Slauson-Blevins, and Julia McQuillan, 'The Experience of Infertility: A Review of Recent Literature', *Sociol Health Illn* 32/1 (2010), pp. 140–62; Mahboubeh Taebi, Nourossadat Kariman, Ali Montazeri, and Hamid Alavi Majd, 'Infertility Stigma: A Qualitative Study on Feelings and Experiences of Infertile Women', *International Journal of Fertility and Sterility* 15/3 (2021), pp. 189–96; Ivana Janković and Jelisaveta Todorović, 'Lived Experiences of Women in Relation to Infertility – A Review of Qualitative Research', *Facta Universitatis-Philosophy, Sociology, Psychology and History* 20/2 (2021), pp. 137–48.

[4] Ahmed M. Al-Kandari and Ahmad Alenezi, 'Cost Burden of Male Infertility Investigations and Treatments: A Survey Study', *Urology Annals* 12/4 (2020), pp. 314–8; Florence E. Omu and Alexander E. Omu, 'Emotional Reaction to Diagnosis of Infertility in Kuwait and Successful Clients' Perception of Nurses' Role During Treatment', *BMC Nursing* 9/5 (2010); Abdullahi Fido and Muhammad Ajmal Zahid, 'Coping with Infertility among Kuwaiti Women: Cultural Perspective', *International Journal of Social Psychiatry* 50/4 (2004), pp. 294–300.

Infertility: A Brief Background

Natural conception normally occurs in a 12-month timeframe, from when the couple starts trying to conceive. If pregnancy is not achieved, without evident barriers, physicians investigate the causes affecting conception. In the case of couples in an advanced parental age (35 years or above), or with an indicated fertility issue, investigations are advised prior earlier than the 12 months period.[5] Infertility affects individuals sporadically, hence the primary and secondary classifications – primary infertility is indicated by a female not achieving spontaneous pregnancy, whereas secondary infertility occurs after having at least one successful pregnancy but non-subsequently.[6]

The biological age is crucial in determining conception during a female's lifespan.[7] Chances of natural conception are the highest during the second decade of a female's age, decreasing gradually after the third decade. Clinically, fertility starts to drop at the mid-thirties, reaching the borderline at 40 years of age. Pregnancy chances are lower during the fourth decade, and risks of maternal complications and abnormal child development are higher.[8] Consequently, delaying pregnancy or infertility treatments is unfavourable due to the natural consequences associated with a female's age.

Any dysfunction within one partner's reproductive system hinders spontaneous conception. Male-related factors are described by intercourse dysfunction and urological disorders. The former includes a series of physical factors required to achieve spontaneous pregnancy, whilst the latter affects the creation and maintenance of a healthy pregnancy.[9] As for female-related factors, unbalanced hormones affect natural conception, and physiological disorders such as uterine abnormalities, endometria disorders, and inefficient tubal functions also form a barrier to pregnancy.[10] In some cases, infertile couples are diagnosed with 'unexplained infertility'; the persisting problem of not achieving pregnancy while medical screening shows no fertility issues for either partner.[11]

Infertility Treatments

Fortunately, the science of reproductive medicine has developed methods to give hope to involuntarily childless couples. Some fertility conditions are treated through surgeries, medicines, or simply a healthier lifestyle.[12] Another type of treatment is the intrauterine insemination (IUI). It is usually the first intervention provided for patients with mild

[5] Sarama Saha, Partha Roy, Cynthia Corbitt, and Sham Kakar, 'Application of Stem Cell Therapy for Infertility', *Cells* 10/1613 (2021), pp. 1–26.
[6] Borght and Wyns, 'Fertility and Infertility', pp. 1–10.
[7] Santiago Brungo-Olmedo, Claudio Chilik and Susana Kopelman, 'Definition and Causes of Infertility', *Reproductive Biomedicine Online Web Paper* 2/1 (2001), pp. 41–53.
[8] Saha, Roy, Corbitt, and Kakar, 'Application of Stem Cell Therapy for Infertility', pp, 1–26.
[9] Jeff Wang and Mark V. Sauer, 'In Vitro Fertilization (IVF): A Review of 3 Decades of Clinical Innovation and Technological Advancement', *Therapeutics and Clinical Risk Management* 2/4 (2006), pp. 355–64.
[10] Brungo-Olmedo, Chilik, and Kopelman, 'Definition and Causes of Infertility', pp. 41–53.
[11] The Unexplained Infertility Guideline Group, 'Unexplained Infertility: Guideline of European Society of Human Reproduction and Embryology', *Eshre*. Available at: https://www.eshre.eu/guideline/UI (accessed 28 May 2024).
[12] Borght and Wyns, 'Fertility and Infertility', pp. 1–10.

infertility issues, unmitigated by medicines or lifestyle adjustments.[13] This treatment helps overcome some limitations to spontaneous pregnancy.[14]

However, more complex issues need advanced, and often costly, interventions to help the couple conceive. In these cases, the technique of in vitro fertilisation (IVF) is required. IVF is the highlight of infertility treatments.[15] The core idea is to have lab-based fertilisation using technologies and incubators that mimic the natural formation of an embryo inside the female's body. The second step is to transfer the embryo to the uterine. The attachment of the embryo to the uterine and the development of the pregnancy is anticipated by IVF. This technology created a revolution within infertility medicine. However, it demands hormonal stimulation, scanning, state-of-the-art laboratories, delicate procedures, and, lastly, to confirm or disprove the success of the treatment through a pregnancy test.[16]

All infertility research and innovation relies on IVF as a baseline to develop childbearing assistance technologies. For instance, intracytoplasmic sperm injection (ICSI) is a developed segment of IVF. It is shown effective in the cases of severe male related infertility requiring more delicate fertilisation technology.[17] Furthermore, add-ons to conventional IVF are initiated to optimise success. These add-ons include, but are not limited to, assisted hatching, female egg or embryo storing, and preimplantation genetic testing.[18] It is important to note that Kuwait strictly follows Islamic rules in marriage and conception in terms of providing a valid marriage certificate and use of one'sown gametes in conception. Henceforth, the law prohibits couple-based interventions for the non-married, and use of add-ons such as male/female gamete donation and surrogate mothers.

Although infertility treatments are highly developed, their outcome remains uncertain. Indicating the success or failure of treatment cycles challenges physicians. Recently, the success rate is estimated to be 4% to 36% per trial depending on the female's age, her response to medication, and the fertility history of the couple.[19] The 2021 fertility statistics in the UK show that, for women aged 18–34, the average IVF pregnancy rates from fresh and frozen embryo transfers are 41% and 36%, respectively.[20] However, for women aged 43–50, their average IVF pregnancy rate is 6%. On average, couples need at least three IVF cycles to achieve one successful pregnancy.[21] Another study finds positive treatment outcomes within five years of continuous treatment.[22]

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[13] Heike Trappe, 'Assisted Reproductive Technologies in Germany: A Review of the Current Situation', in Michaela Kreyenfeld and Dirk Konietzka (eds), *Childlessness in Europe: Contexts, Causes, and Consequences* (Berlin: Springer Open, 2017).

[14] The Unexplained Infertility Guideline Group, 'Unexplained Infertility'.

[15] Wang and Sauer, 'In Vitro Fertilization (IVF)', pp. 355–64.

[16] Trappe, 'Assisted Reproductive Technologies in Germany'.

[17] Wang and Sauer, 'In Vitro Fertilization (IVF)', pp. 355–64.

[18] Human Fertilization and Embryology Authority (HFEA), 'HFEA: UK Fertility Regulator'. Available at: https://www.hfea.gov.uk/ (accessed 20 May 2024).

[19] Katie Falloon and Philip M. Rosoff, 'Who Pays? Mandated Insurance Coverage for Assisted Reproductive Technology', *American Medical Association Journal of Ethics* 16/1 (2014), pp. 63–9.

[20] HFEA, 'HFEA: UK Fertility Regulator'.

[21] ESHRE Capri Workshop Group, 'Economic Aspects of Infertility Care: A Challenge for Researchers and Clinicians', *Human Reproduction* 30/10 (2015), pp. 2243–8.

[22] Alireza Zarinara et al., 'The Success Rate and Factors Affecting the Outcome of Assisted Reproductive Treatment in Subfertile Men', *Iran J Public* 49/2 (2020), pp. 332–40.

The Financial and Socioeconomic Costs of Infertility

Infertility interventions are packed with financial and physical burdens. The substantial costs of infertility interventions dictates their accessibility. Patients often find themselves forced to make large financial and economic sacrifices, sometimes beyond their capabilities.[23] Scholars classify the costs of infertility treatments into direct and indirect costs.

The Direct Costs of Infertility Treatments

They are the financial expenditures incurred by infertility patients including consultations, medications, procedures, laboratory services, and hospital and medical staff charges.[24] Financial spending on treatment varies according to the patients' diagnosis, intervention, medications, use of add-ons, and laboratory tools. Therefore, having a clinical consensus on the number of diagnostic tests and cost estimation for treatment cycles is unachieved.[25] In some European countries, subsidisation of infertility treatments is available fully or partially for a limited number of treatment cycles. For IVF/ICSI procedures, 33 countries provide partial funding for up to 6 cycles, whereas 3 countries provide full subsidisation for 6 cycles.[26]

The financial costs of treatments vary significantly among high-income countries. Researchers find that unsubsidised treatments constitute approximately 50% of patients' disposable income in the US, 20% in selected European countries, and 12% in Australia, per cycle.[27] The cost of IVF per successful outcome, including multiple rounds, is estimated to be $61,377 in the US.[28] In the case of France, the cost per cycle is estimated to be approximately €7,000.[29] In the UK, 63% of patients partially pay for treatments with an average cost of £13,750.30 Moreover, treatment costs escalate to £30,000; reaching £100,000, as reported by 12% and 0.5% of patients, respectively.

In lower income countries, patients paying out-of-pocket fall into severe financial issues leading to poverty.[31] The direct relationship between per capita income and treatment

[23] Georgina M. Chambers et al., 'The Impact of Consumer Affordability on Access to Assisted Reproductive Technologies and Embryo Transfer Practices: An International Analysis', *Fertility and Sterility* 101/1 (2014), pp. 191–8; Silke J. Dyer, Latiefa Vinoos, and John E. Ataguba, 'Poor Recovery of Households from Out-Of-Pocket Payment for Assisted Reproductive Technology', *Human Reproduction* 32/12 (2017), pp. 2431–6.

[24] Georgina M. Chambers, G. David Adamson, and Marinus J. C. Eijkemans, 'Acceptable Cost for the Patient and Society', *Fertility and Sterility* 100/2 (2013), pp: 319–25.

[25] ESHRE Capri Workshop Group, 'Economic Aspects of Infertility Care', pp. 2243–8.

[26] Fertility Europe, 'European Atlas of Fertility Treatment Policies'. Available at: https://fertilityeurope.eu/european-atlas-of-fertility-treatment-policies/ (accessed 25 June 2024).

[27] Mark P. Connolly, Stijn Hoorens, and Georgina M. Chambers, 'The Costs and Consequences of Assisted Reproductive Technology: An Economic Perspective' *Human Reproduction Update* 16/6 (2010), pp. 603–13.

[28] Patricia Katz et al., 'Costs of Infertility Treatment: Results from an 18-Month Prospective Cohort Study', *Fertil Steril* 95/3 (2011), pp. 915–21.

[29] Bastien Bourrion et al., 'The Economic Burden of Infertility Treatment and Distribution of Expenditures Overtime in France: A Self-Controlled Pre-Post Study', *BMC Health Services Research* 22/512 (2022).

[30] Nicky Payne, 'Fertility Network UK Survey: The Impact of Fertility Challenges and Treatment'. Available at: https://fertilitynetworkuk.org/wp-content/uploads/2022/10/Fertility-Network-Infertility-and-Fertility-treatment-Impact-report-2022.pdf (accessed 1 June 2024).

[31] Silke J. Dyer and Malika Patel, 'The Economic Impact of Infertility on Women in Developing Coun-

cost explains patients' lack of access to treatment, particularly with the absence of subsidisation programs.[32] Less than 50% financial recovery is obtained following 4 years from paying for one IVF cycle in South Africa.[33]

Subsidisation has a crucial role in determining patients' accessibility and affordability to treatments.[34] Finding evidence from some European countries and a few US states with IVF insurance coverage is promising in maintaining equality among couples seeking treatments.[35] Passing the law of insurance for infertility treatments in the US was associated with a significant increase in utilisation, particularly from the more educated females.[36] However, healthcare policies worldwide remain lagged in insurance for infertility treatments. Hence, problems of inaccessibility and costs burden persist.[37]

The Indirect Costs of Infertility Treatments

One of the major non-monetary consequences of treatment is the loss of productivity.[38] Patients' disclosure to their employers is a difficult decision due to the issue being personal, career risky, and unsupported by legal workplace policy for pre-conception care.[39] In France, 49% of the sampled patients experience negative effects on their professional life, and 46% try to fabricate excuses to justify change in their work behaviour to keep treatment personal.[40] However, only 47% of disclosing patients in the UK received support by their employers during the treatment phase.[41] Moreover, 58% and 36% of responders felt concerned that treatment would affect their career progression and hurt it, respectively. Female workers are the most strained by infertility treatments in terms of difficulty in time management, decreased quality of work, days taken off, and presenteeism.[42]

tries – A Systematic Review', *Facts Views Vis Obgyn* 4/2 (2012), pp. 102–9.

[32] Purity Njagi et al., 'Economic Costs of Infertility Care for Patients in Low-Income and Middle-Income Countries: A Systematic Review Protocol', *BMJ Open* 10/11 (2020).

[33] Dyer, Vinoos, and Ataguba, 'Poor Recovery of Households from Out-Of-Pocket Payment for Assisted Reproductive Technology'.

[34] Connolly, Hoorens, and Chambers, 'The Costs and Consequences of Assisted Reproductive Technology', pp. 603–13.

[35] Iris G. Insogna and Elizabeth S. Ginsburg, 'Infertility, Inequality, and How Lack of Insurance Coverage Compromises Reproductive Autonomy', *AMA Journal of Ethics* 20/12 (2018).

[36] Marianne P. Bitler and Lucie Schmidt, 'Utilization of Infertility Treatments: The Effects of Insurance Mandates', *Demography* 49/1 (2012), pp. 125–49.

[37] World Health Organization, 'Infertility Prevalence Estimates (1990-2021)'. Available at: https://iris.who.int/bitstream/handle/10665/366700/9789240068315-eng.pdf?sequence=1 (accessed 28 May 2025).

[38] Dyer, Vinoos, and Ataguba, 'Poor Recovery of Households from Out-Of-Pocket Payment for Assisted Reproductive Technology'.

[39] Olga van den Akker, Nicola Payne, and Suzan Lewis, 'Catch 22? Disclosing Assisted Conception Treatment at Work', *International Journal of Workplace Health Management* 10/5 (2017), pp. 364–75.

[40] Blandine Courbiere et al., 'Psychosocial and Professional Burden of Medically Assisted Reproduction (MAR): Results from a French Survey', *PLoS ONE, Public Library of Science* 15/9 (2020).

[41] Nicky Payne, 'Fertility Network UK Survey: The Impact of Fertility Challenges and Treatment'. Available at: https://fertilitynetworkuk.org/wp-content/uploads/2022/10/Fertility-Network-Infertility-and-Fertility-treatment-Impact-report-2022.pdf (accessed 28 May 2025).

[42] Marieke Krol, Werner Brouwer, and Frans Rutten, 'Productivity Costs in Economic Evaluations: Past, Present, Future', *PharmacoEconomics* 31 (2013), pp. 537–549; Yuya Imai et al., 'Risk Factors for Resignation from Work after Starting Infertility Treatment among Japanese Women: Japan-Female Employment and Mental Health in Assisted Reproductive Technology (J-FEMA) Study', *Occupational and Environmental*

Methodology

Surveys are extensively used in healthcare and social research.[43] This study is survey-based, aiming to collect and analyse data on the financial and socioeconomic costs of infertility. The sample covers couples undergoing or having undergone infertility treatments in Kuwait during the years 2018–2024. The timeframe of seven years is selected to account for participants recalling past events and the use of recent treatment technologies. The study uses non-probabilistic 'snowball' sampling in recruiting participants, which is a method requiring members of a targeted population to recruit other members within the targeted population to be in the sample. Despite the limitations, social researchers have shown its sufficiency in sampling rare or sensitive populations.[44]

An adequate sampling framework of the targeted population is unavailable due to the non-existence of a local network or a registry keeping records of infertility patients. Moreover, the study's limited time makes screening through clinics demanding. In descriptive studies, the objective is to explore the issue without statistical generalisation. Therefore, having a small sample of infertility patients in Kuwait suffices the purpose of this study.

Survey Questions

The survey follows the structure predominant in the UK infertility patient study.[45] The survey is written in Arabic and English languages and was distributed online to the targeted population. The survey was self-administered through the Microsoft Forms survey tool and composed of 3 sections. Section 1 covers the demographic information and treatments conducted. The demographic questions investigate the couples' ages, years of marriage, years of seeking infertility treatments, employment conditions, and per capita income. The treatments section looks into the different types of treatments conducted by the couple, use of add-ons to conventional treatment, successful and unsuccessful cycles, treatment providers and possible transitions.

Section 2 investigates the financial expenditures associated with treatments. The questions focus on the costs of conventional treatments endured by the couples paying out-of-pocket, cost of add-ons when used, and health insurance covering infertility treatments. Section 3 explores the impact of combining work with treatment on the woman's professional life. This section is dedicated to working women while undergoing infertility treatments. The questions focus on the smoothness of attending consultations and screening during work hours, days away from work, women's professional performance career progression, and workplace support during treatment.

Survey Analysis

Medicine (2020), pp. 1–7.

[43] Kate Kelly et al., 'Good Practice in the Conduct and Reporting of Survey Research', *International Journal for Quality in Health Care* 15/3 (2003), pp. 261–6.

[44] Royce A. Singleton and Bruce G. Straits, *Approaches to Social Research* (Oxford: Oxford University Press, 2005).

[45] Payne, 'Fertility Network UK Survey.

The survey was launched in June 2024 and circulated in the field for two months. Potential participants are first contacted with a letter describing the study then are directed to the questionnaire's link upon accepting to participate, assuring confidentiality and identity anonymity for all participants. The full survey was reviewed and approved by the LSE's Research Ethics Committee, Reference 390264.[46]

Pilot testing by 10 participants was conducted to test the clarity and comprehension of questions. Each participating couple submits one response. Screening questions are asked at the beginning of the survey to ensure the correct coverage of the sample. Receiving a 'no' answer to questions relevant to the time or country of treatment ends the survey, and hence the responder is not within the sample. Time spent for taking the survey is estimated to indicate inattentive responses.

The data were recorded based on screening attentive and valid responses. As this study is descriptive, minimal statistical inferences is conducted. Accordingly, the descriptive analysis is conducted based on formulating variables to study cross-sectional relationships. Table 1 shows the descriptions of the key terms used throughout the survey and analysis.

Table 1: Key Terms of Variables Operationalised from the Survey

Variable	Description
Treatment Cycle	Represents one attempt to conceive using infertility treatments.
Invasive Treatment	Using a single or a combination of advanced, lab based infertility interventions such as IVF/ ICSI, add-ons, and surgeries.
Non-Invasive Treatment	Using a single or a combination of non-lab based infertility interventions such as medications and IUI treatment.
Middle-Income	Estimated as the median per capita income reported by the survey respondents.
Financial Burden	Indicated by the treatments' cost constituting at least 50% of the couple's dyadic income.
Out-of-pocket	Infertility patients fully funding their treatments.

Results

The survey received 120 responses. Based on the criteria of time and place of treatment, 69 responses are representative of the targeted population and are valid for analysis. It is important to note that item non-response occurs within the demographic section. Due to the social sensitivity of the issue, some couples were reluctant to reveal information indicating their identities. The spouse-level demographic information consisting of the age groups, educational level, employment level, and monthly income are shown in Table 2, in addition to their item non-response rates.

[46] LSE Research Ethics Committee. Email: research.ethics@lse.ac.uk

Demographics

Table 2: Spouse-Level Statistics

Demographics	Males n (%)	Females n (%)
Age Groups		
20-29 years	2 (3%)	6 (10%)
30-39 years	29 (45%)	24 (59%)
40-49 years (Males)	29 (45%)	
50 years and above (Males)	4 (6%)	
40-45 years (Females)		17 (29%)
Above 45 years (Females)		1 (2%)
Education		
High school degree or less	8 (13%)	
Diploma or special training	5 (8%)	9 (16%)
University or bachelor's degree	37 (58%)	34 (59%)
Graduate degree (master's or PhD)	14 (22%)	15 (26%)
Employement		
Employed (public or private sector)	58 (91%)	51 (88%)
Self-employed	3 (5%)	4 (7%)
Unemployed		2 (3%)
Retired	3 (5%)	1 (2%)
Monthly Income (KD)* Approximated		
500–1,000	3 (6%)	7 (13%)
1,001–1,500	12 (22%)	21 (38%)
1,501–2,000	24 (44%)	17 (31%)
2,001–2,500	6 (11%)	4 (7%)
Above 2,500	10 (18%)	6 (11%)
Monthly Income (KD)* Reported		
Average	2,064	1,431
Median	1,700	1,500
Maximum	5,200	3,000
Minimum	550	500

Note: Non-response rates are 8% and 16% for males and females, respectively, for demographic variables: age groups, education, and employment. They are 20% and 20% for approximated monthly income, and 83% and 83% for reported monthly income.

**1000 KD= £2,496, based on the exchange rate, 0.400, set by the Central Bank of Kuwait (2024).*

Clinically, the biological age of the males is less significant in determining their accessibility to treatment. Unlike the females, whose biological age of 40+ years affects their conception capacity and occasionally their accessibility to treatment. Thus, the females' age group classification is determined accordingly. In the survey, approximately 59% of the females are at their third decade. Whereas approximately 29% are within the 40–45 years, which is the critical age for treatment accessibility.

Regarding the level of education, approximately 58% and 59% of males and females have a university degree. Moreover, approximately 22% and 26% of males and females have post-graduate degrees indicating an educated sample. The majority of spouses (91% and 88% of males and females) are employed in the public or private sectors in Kuwait.

In Table 2, the income level is a measure of the employment-related wage the spouse receives per month disregarding any other sources of income. Accordingly, 22% and 38% of males and females' monthly incomes are within the range 1,001–1,500 KD, approximately. Further, 44% and 31% of the spouses receive a monthly income of approximately 1,501–2,000 KD. This result indicates that the spouses in this sample are within the middle-income level. Despite the high non-response rate to the reporting monthly income question, the median and average reported incomes by is within the approximated income groups.

Table 3: Couple-Level Statistics

Demographics	n (%)
Infertility	
Primary	34 (49%)
Secondary	35 (51%)
Years of marriage	
Less than 1	
1–3	8 (12%)
4–6	7 (10%)
More than 6	54 (78%)
Years of treatment	
Less than 1	16 (23%)
1–3	24 (35%)
4–6	17 (25%)
More than 6	12 (17%)
Invasive treatments	
IVF/ICSI	33 (36%)
Surgery only	0
Combination	17 (71%)
Non-invasive treatments	
Medications only	9 (10%)
IUI	3 (3%)
Combination	7 (29%)
Personal treatment funding	
Income	27 (47%)
Savings	3 (5%)
Loan	6 (10%)
Combination	22 (38%)
Non-personal treatment funding	
Health insurance	2 (3%)
Public sector	9 (12%)

Table 3 shows the couple-level statistics in the sample. On the nature of infertility, prevalence of primary and secondary infertility is approximately 49% and 51%, respectively, as indicated by the couples' conception status before seeking treatment. For 78% of the couples, they have exceeded 6 years of marriage. Moreover, 35% and 25% have been seeking infertility treatments for 1–3 years and 4–6 years, respectively. However, the treatment duration for 17% of the couples exceeded 6 years.

Regarding the types of treatments, Table 3 shows that approximately 71% of the couples experienced a combination of invasive treatments composed of IVF/ICSI and their related procedures, in addition to surgery. Whereas, approximately 29% of the couples experienced a combination of the less invasive treatments such as medications and IUI procedures.

Approximately, 85% of the couples personally fund or pay out-of-pocket for their treatments. Of these, 47% rely entirely on their own monthly income. The other 38% combine their incomes, savings, loans, sale of assets, and monetary support from their extended families to cover their treatments (SD. 4.5). As few as 3% have full insurance covering infertility treatments.

Table 4: Treatment Cycles' Success and Failure

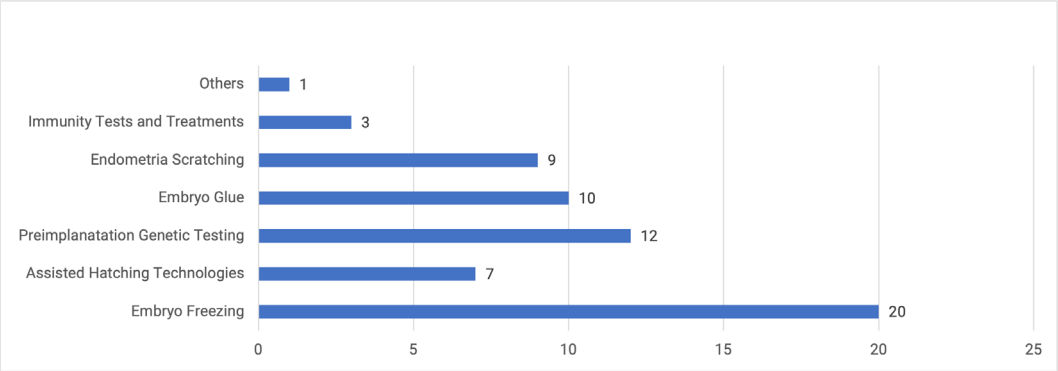
Treatment Cycles	n (%)
Successful in treating infertility	
Single birth	11 (34%)
Multiple births	18 (56%)
Unknown	3 (9%)
Unsuccessful in treating infertility	
Average	32 (46%)
Failed Cycles	
1–3 cycles	20 (51%)
4–6 cycles	11 (28%)
More than 6 cycles	2 (5%)
Unknown	6 (15%)

Note: The maximum number of failed cycles reported was 10, while the minimum was 1.

54% of the couples had children by the different methods of infertility interventions. From these couples, 34% had a single baby, and 56% had multiple births or multiple successful attempts, as shown in Table 4. However, 46% could not defeat their infertility issue. These couples are still seeking success in their upcoming treatment attempts.

Table 4 also shows that from all types of treatments, 57% of the couples had to face at least one failure of a treatment cycle. In this sample, the minimum number of cycle failure is 1 and the maximum is 10, as reported by the responding couples. To illustrate, 51% faced a failure of 1–3 cycles, and 28% had to endure the failure of 4–6 cycles. Approximately, 5% were challenged by the failure of more than 6 cycles.

Figure 1: Treatment add-ons experienced by IVF/ICSI Patients



Approximately 72% of couples in the sample experienced IVF/ICSI interventions. Additionally, 55% were exposed to add-ons to improve their treatment outcome. Figure 1 illustrates the different types of add-ons used by 58% of IVF/ICSI patients as a single add-on or as part of multiple recommended add-ons per cycle. Embryo freezing, genetic testing, and embryo glue appears to be the frequently used add-ons by the IVF/ICSI patients.

Behavioural Elements

Table 5: Healthcare Providers for the Infertility Treatments

Healthcare Provider	n (%)
Sectors	
Public	2 (3%)
Private	50 (75%)
Public & private	15 (22%)
Transitions	
Public to private	6 (13%)
Private to public	9 (20%)
Within the same sector	31 (67%)

Figure 2: Couples' Criteria for Choosing Infertility Provider

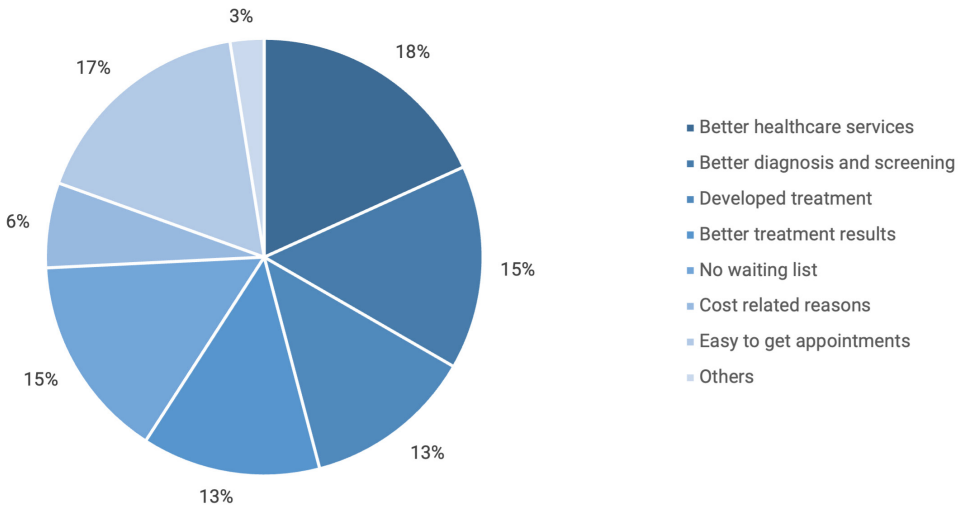


Table 5 shows couples' choices of their infertility treatments providers. Private health clinics are the dominant providers of infertility treatments, as indicated by 75% of the couples. Nevertheless, 22% had hybrid treatments in the private and public sectors, and 3% in the public sector only. Couples' main criteria for choosing their treatment provider are better services, easy to get appointments, no waiting lists, and better diagnosis and screening, as shown in Figure 2.

As shown in Table 5, changing the healthcare provider appears to be common among the couples, as 66% experienced transition between healthcare providers. Most of the transitions (67% of couples) occurred within the same sector. Consistent failure of treatment, hoping for better outcomes, seeking more experienced specialists, and insufficiency and incompetence of treatments and providers are the main reasons for transitions as explained by couples. Regarding transitions between sectors, 20% moved from the private to the public sector, and 13% from the public to the private sector. High costs of treatments in the private sector, availability of different medications, and better experienced specialists are the main reasons that lead some couples to look for treatment in the public sector. However, some patients in the public sector either had a negative experience or were frustrated by the time-consuming appointments, hence moving to the private sector.

The Financial Costs of Treatments

Table 6: Financial Costs of Infertility Interventions for One Complete Cycle

Cost in Kuwaiti Dinars	IUI	IVF/ICSI	Add-On n (%)
Less than 500	10 (34%)		3 (9%)
500–1,000	6 (21%)		12 (35%)
1,001–1,500	4 (14%)		9 (27%)
1,501–2,000	9 (31%)	3 (7%)	
2,001–3,000		15 (33%)	2 (6%)
3,001–4,000		13 (28%)	8 (24%)
4,001–5,000		7 (15%)	
More than 5,000		8 (17%)	
Reported			
Average	674	3,928	1,279
Maximum	2,000	6,000	4,000
Minimum	135	1,550	200

**1000 KD= £2,496, based on the exchange rate, 0.400, set by the Central Bank of Kuwait (2024)*

As shown in Table 6, IUI patients reported an average cost of approximately 674 KD/£1,682 per cycle including costs of consultations, screening, medications, and procedures. The minimum cost of IUI treatments requiring neither medications nor screening is 135 KD/£337. However, for some couples, the IUI's cost can reach 2,000 KD/£4,993, depending on the patients' personalised treatment plan.

For the IVF/ICSI interventions, the average cost of one standard cycle including consultations, investigations, medications, and procedure is 3,928 KD/£9,805, based on the responses of 65% of the IVF/ICSI patients. The cost changes depending on the treatment plan, reaching more than 5,000 KD/£12,481 per cycle, as reported by 17% of couples (SD. 4.8). In the case of using add-ons, the average additional cost is 1,279 KD/£3,193. Similarly, the cost of add-ons differs among couples based on their treatment needs, reaching 2,000 KD/£4,993 and more than 3,000 KD/£7,489, as reported by 26% and 24% of the patients, respectively (SD. 11.7).

The cost of one IVF/ICSI cycle with at least one add-on reaches 5,207 KD/£12,998 on average. However, for some couples (56% of add-on users) needing more than one add-on or more investigations, the cost of their cycle easily escalates from 6,000 KD/£14,978 to more than 10,000 KD/£24,963. Couples frantically worry the cycle would fail and about having to re-endure the heavy physical and financial costs of another cycle. The massive spending on infertility treatments threatens couples' financial security.

Analysing couples' income levels shown in Table 2, approximately 65% of the husbands and 69% of the wives' monthly incomes are within the range (1,000–2,000 KD/£2,496–£4,993). Therefore, the average cost of one IVF/ICSI treatment is approximately double the individual's upper-bound monthly income. In the cases of couples with multiple cycles or requiring more than one add-on, the cost is significantly higher than the couples' monthly income combined for several months, unrealistically dedicating it entirely for infertility treatment. In the daunting scenario of having to face multiple cycle failures, which is a common phenomenon in the IVF/ICSI treatments, the cost will be significantly higher than the couple's earnings.

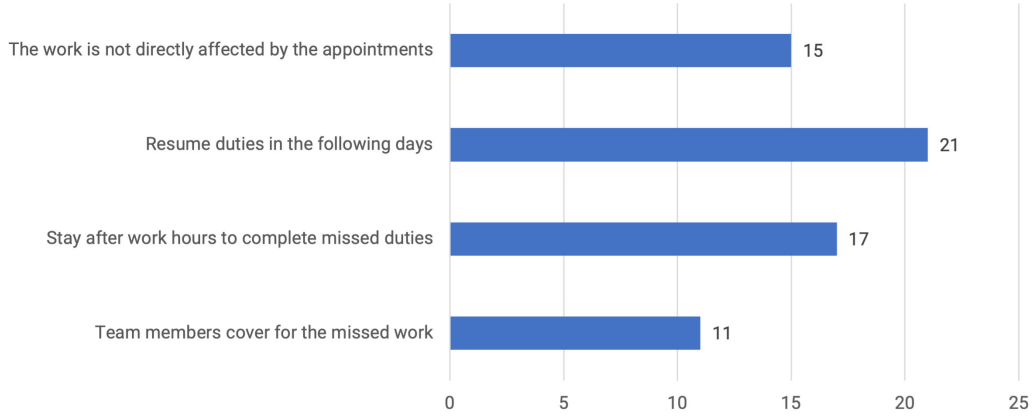
The financial costs of infertility treatments in Kuwait align with the costs estimated at high income countries, as illustrated in the literature review. However, Kuwait lags in treatment subsidisation policies and insurance coverage for such treatments. As indicated from the survey responses, the public sector appears to have a limited role relative to the private sector in assisting couples with their infertility. This phenomenon exacerbates the infertility issue for affected couples.

The Socioeconomic Costs of Treatments

The indirect cost of infertility treatments is perceived in females' professional life. Pregnant women are legally supported at their workplaces until postnatal duration. Their career progression is hence protected. However, having infertility treatments are not legally supported by workplace policies, despite the regular monitoring and assessment required by their physicians.

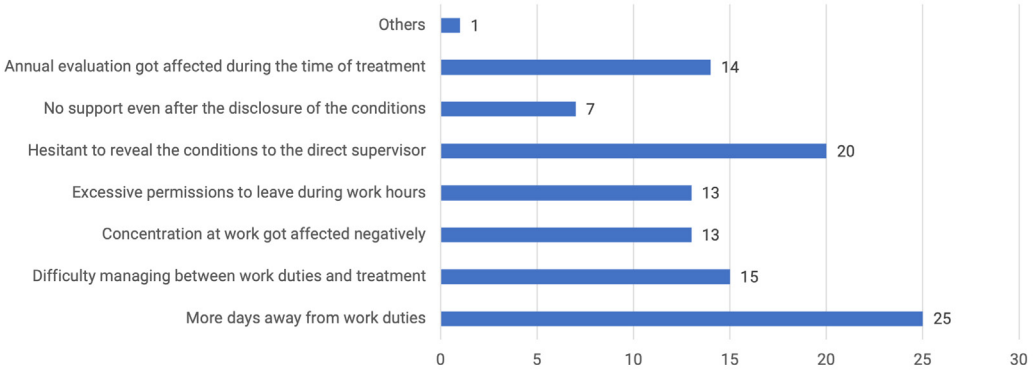
In the survey, 94% of females are employed during the time of their infertility treatment, with 85% and 11% in the public and private sectors, respectively. During treatment, 78% of the females indicate that their multiple blood tests, scanning, and monitoring appointments occur during working hours. Only 5% disclose to their employers to get support throughout treatment. Otherwise, 45% ask for a permission to leave during working hours and take sick leaves to attend their appointments. As shown in Figure 4, females compensate for their missed duties either through resuming work in the following days or staying for longer hours, as reported by 35% and 27% of female workers.

Figure 3: Managing Treatment Appointments and Work Duties



During the time of treatment, approximately 79% of female workers indicate having to take short (4 days or less), long (5 days or more), sick leaves or both due to spending long hours in the hospital on procedure day for IUI and IVF/ICSI interventions. Moreover, some are advised to rest during the two weeks after transfer until the treatment's outcome is revealed. All this is in addition to the psychological impact of the hormonal stimulating medications which can push some women to be away from work due to its effect on their performance.

Figure 4: Impact of Infertility Treatments on Female Workers' Career Progression



Regarding the consequences of treatment on female career progression, 59% of working women believe they were impacted in various ways. Mostly, they have more days away from work. They also are hesitant to disclose their conditions at their workplace and are having a hard time managing between treatment demands and work duties, as shown in Figure 5.

Conclusion

'Extremely Costly', 'Psychologically Draining', 'Disappointing', 'I feel anxious, depressed, and unsupported', are some statements quoted from the couples who openly shared their infertility narratives. Despite the study's small sample size, constraints of the snowball sampling, and hence generalisability limitations, this baseline study is important for understanding healthcare access and treatment seeking behaviours for assisted reproductive medicine in Kuwait. Analysing the responses of 69 couples, infertility is indeed a significant problem with heavy financial and socioeconomic burdens.

The treatments' costs in Kuwait align with the costs in the other high-income countries such as the US, UK, and France, with an estimated average cost of one IVF/ICSI cycle with at least one add-on to be 5,207 KD ~ £12,998. However, for couples within the middle-income level, the cost of one treatment cycle exceeds their dyadic income for several consecutive months. Hence, couples experiencing numerous cycle failures or needing add-ons to the conventional treatment face daunting financial liabilities. Similarly, female workers having prolonged infertility treatments are disadvantaged at their workplaces compared to their peers without infertility struggles. From these challenges are difficulty of disclosure and lack of workplace policy support.

The establishment of three fertility care units in the public sector is indeed a successful step in reducing the financial burden on couples struggling with infertility for years who had paid massive amounts due to recurrent treatment failure. However, full or partial subsidisation of treatments in the private sector could benefit childless couples. Evaluating the subsidisation eligibility should be based on number of children conceived, number of treatment cycles conducted, necessity of invasive interventions, and years of infertility.

At workplaces, infertility treatments need to be normalised as a medical condition requiring regulations and protection against any penalties due to treatment requirements. For instance, 'working from home' during the two weeks post-implantation procedure of an IVF or ICSI should by default be granted to female workers due to post-transfer rest requirement. Moreover, flexible working hours during treatment are necessary to help women manage between their work duties and treatment demands.

Following the paths of the developed international healthcare systems, the supply and demand of infertility treatments should be regulated and monitored through establishing a local regulatory entity. It is crucial to promote transparency within the assisted reproductive medicine providers in Kuwait to help infertility patients with making informed decisions regarding their treatments and their providers. Under the umbrella of the regulatory authority, updated information and data on the types of infertility medicines and treatments, treatment providers, and informative guidelines and sessions would effectively elevate the fertility healthcare policy in Kuwait. Due to the multiple consequences of infertility, the affected societal segment deserves to have longitudinal studies relevant to financial recoveries post treatments, public-private sector experiences comparisons, and psychological and professional impact investigation for couples undergoing or had undergone infertility treatments.

Lessons from the UK's Module for Regulating Infertility Treatments

The Human Fertilisation and Embryology Authority (HFEA) is the official regulator for infertility treatments and research in the UK, established according to the UK's Human Fertilisation and Embryo Act 1990. The HFEA issues and renews licenses to all fertility clinics, as well as monitoring and inspecting operations. Inspections are conducted every two years to ensure high quality, legal, and safe practices and research. It enlightens clinics with the latest research and innovation to ensure their consistency with the fertility sector's development. HFEA is funded through licence' fees, IVF treatment fees, and grants from the UK's Department of Health and Social Care.

How does HFEA operate?

HFEA is a small entity with 65 employees. Its board members represent a variety of specialisations to bring an objective point of view into decision making. The board includes doctors, scientists, and researchers in the field of human fertility. In addition, multidisciplinary members including experts in sociology, law, religion, finance, journalism, and the public sector are involved to bring their knowledge into the fertility sector management. To maintain transparency, the public have the permission to attend the board's meetings. Similarly, the meetings are recorded and published to the public.

HFEA engages closely with the infertility community to tailor decisions and rules based on their needs. The community is composed of two groups: professional practitioners and patient-based organisations. The professional practitioners are reproductive physicists, scientists, nurses, and counselling specialists. Patients' organisations represent different segments of current and prospective fertility patients populations. They meet twice a year to discuss the different dimensions of fertility treatments and their impacts in the UK.

How can HFEA support infertility treatment providers and seekers?

HFEA equally manages the supply and demand sides of the fertility sector. From the supply side, it sets the standard practice of treatment and research to be followed by all fertility clinics through publishing the UK's practice guide. It includes guidelines for treatments, storage of gametes, training of specialists, counselling services, and patient support. It also sets the methods of managing risks of multiple births, preimplantation embryo testing and gender selection, ICSI procedure, and quality of equipment and material at clinics. However, it neither controls treatment pricing nor NHS funding eligibility and decisions.

From the demand side, HFEA helps patients search for fertility clinics around the UK. It also explains the different types of treatments, medications, procedures, and their success rates to help patients understand their fertility health and make informative treatment decisions. It keeps a verified registry for information and data collected from all fertility clinics. Data and statistics are published in HFEA's dashboard to serve the different categories of users.

What are HFEA's data collection methods?

Since 1991, licensed clinics are legally required to disclose their data on treatments and outcomes. The validated records are stored at the registry, which includes clinical data on the performed cycles, their relevant pregnancy rates, live births, and type of funding. Annual data from 1991 to 2021, which is the latest validated, are available at the electronic dashboard. Data are accessible for the public in a user-friendly manner.

How can Kuwait benefit from HFEA's strategy?

Establishing a regulatory entity to organise fertility treatments in Kuwait is a necessary step towards maintaining equality in healthcare delivery. To replicate HFEA's framework:

- A legal network between the Ministry of Health and Ministry of Social Affairs and Labor is the core for establishing the regulatory entity. Expertise from the medical, legal, psychological, social, and financial fields are required to tailor policies according to patients' needs.
- Establish a standardised guide for treatment services as a main reference for clinics and patients alike. It is important to unify the rules among clinics of appropriate fertility interventions by case, quality of facilities and equipment, and laboratory expertise. Further, it is necessary to report to the regulatory entity the purposes of performing preimplantation genetic testing and the use of ICSI or 'ICSI saving' instead of conventional IVF.
- Establish a register to collect and publish data from all clinics to promote transparency and accountability of treatments and their outcomes. The register should include validated data on clinics, outcome of cycles by treatment type, patients' age, and funding type. Accordingly, patients will be able to make informed decisions regarding their treatments.
- Networking with stakeholders from different specialities and meeting regularly with them is necessary to address the needs of infertility patients such as counselling, work management, and physical and mental healthcare.

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