Medical Science

pISSN 2321–7359; eISSN 2321–7367

How do young Saudi men prefer to receive fertility information? A population: Based survey in Al Kharj

Ali Hassan A Ali[1,2*], Mohammed H Karrar Alsharif[1], Abubaker Y Elamin[3], Salman S Bin Ofisan[4], Ali Y Alali[4], Abdulrahman Mesfer Aldawsari[4], Ammar H Alenazi[4], Bandar Suliman S AlSultan[4], Talal Abdullah Alharbi[4]

To Cite:
Ali AHA, Alsharif MHK, Elamin AY, Ofisan SSB, Alali AY, Aldawsari AM, Alenazi AH, AlSultan BSS, Alharbi TA. How do young Saudi men prefer to receive fertility information? A population: Based survey in Al Kharj. Medical Science 2022; 26: ms482e2566.
doi: https://doi.org/10.54905/disssi/v26i129/ms482e2566

Authors' Affiliation:
[1]Anatomy Department, College of Medicine, Prince Sattam Bin Abdulaziz University, Al-Kharj 11942, KSA
[2]Anatomy Department, Faculty of Medicine, Al-Azhar University, Cairo, Egypt
[3]Department of Histology and Embryology, Faculty of Medicine, Ondokuz Mayis University, 55139 Atakum, Samsun, Turkey
[4]College of Medicine, Prince Sattam Bin Abdulaziz University, Al-Kharj, KSA

[*]**Corresponding author**
Anatomy Department, College of Medicine, Prince Sattam Bin Abdulaziz University, Al-Kharj 11942, KSA;
Anatomy Department, Faculty of Medicine, Al-Azhar University, Cairo, Egypt
Email: alihassan3750@yahoo.com /a.ali@psau.edu.sa

Peer-Review History
Received: 01 November 2022
Reviewed & Revised: 03/November/2022 to 14/November/2022
Accepted: 17 November 2022
Published: 21 November 2022

Peer-review Method
External peer-review was done through double-blind method.

URL: https://www.discoveryjournals.org/medicalscience

ABSTRACT

Background and objectives: The factors that contribute to male infertility are poorly understood by men. Men's awareness of their own fertility has not been the subject of extensive research. Men are generally less aware of issues with fertility and reproductive health according to research on both men and women. *Methods:* Over the course of three months in 2022, a web-based survey on male fertility and reproductive health included a regionally representative sample of Saudi men in Al Kharj city. Men between the ages of 19 and 67 were included in the study. *Results:* There were 395 male volunteers with an average age of 25. Male infertility causes were listed by each participant and their understanding of fertility was assessed by two open ended questions and a comprehensive list of related risk factors and medical disorders. The general level of understanding of fertility remained consistent across most demographic parameters. Seventy percent of the males surveyed said they were familiar with male fertility and reproduction. *Conclusion:* Relatively few men learnt about fertility through doctors or the internet relative to television and radio.

Keywords: Fertility, Male, Knowledge, Risk Factors, Awareness, Survey

1. INTRODUCTION

It is crucial to raise men's understanding of the infertility risk factors for given that most men want to start families. Male infertility intersects with challenges related to public health (Barratt et al., 2021). Male infertility can have a negative impact on men's social functioning, general and mental health and role performance (Chachamovich et al., 2010). Male problems, such as low sperm count and poor sperm morphology, are the primary or contributing causes of over 50% of diagnosed cases of infertility (Daniluk and Koert, 2012). In an initial evaluation of a man's fertility status, clinical recommendations include a reproductive history and at least one semen assay (Schlegel et al.,

2021) to assess sperm quantity, morphology and motility (Baskaran et al., 2020).

Most men express a desire to have children and state that fatherhood is a big part of their life. Thus, men should be aware of variables that could affect the caliber of their sperm and as a result, their fertility (Hammarberg et al., 2017). Poor general health is linked to male infertility: Men who are infertile have more medical problems than fertile men do including cardiovascular disease, prostate cancer, diabetes and testicular cancer (Eisenberg et al., 2016). In a study of Canadian men between the ages of eighteen and fifty, for example, average participant recognition of the risk factors for male infertility was just half (Daumler et al., 2016).

A man's concept of manhood may be damaged by seeking reproductive guidance because infertility can result in feelings of worthlessness and inadequacy (Hanna and Gough, 2020). Men play a vital role in a couple's decision to have children (Dudgeon and Inhorn, 2004). Initiatives to enhance awareness of male fertility are thus particularly needed. This study only considers men and our research is among the first to shed light on the knowledge base about men's reproductive health in the Kingdom of Saudi Arabia.

2. MATERIALS AND METHODS

The PSA University Ethical Committee approved of our study in Al-Kharj (PSAU-2022 ANT 70/43PI). A population-based survey of Saudi men who satisfied the study's inclusion criteria was conducted from 15 April to 20 July 2022; Male participants between the ages of 19 and 67 were required. Before making the questionnaire available in Arabic, the survey company conducted a pilot test to make sure the items were clear and acceptable. No personally identifiable information was saved or recorded and participants were assured of their confidentiality; 395 men between the ages of 19 and 67 completed the study. Our survey reflects Saudi men in Al-Kharj in terms of regional distribution, immigration status and paternity. The survey questions were developed by our research team, which also included a male fertility doctor with more than 15 years of clinical expertise.

Demographics and fertility experiences were the first questions. Men were then asked two open ended questions about risk factors and medical disorders connected to male infertility. Those who responded had the option to say if they were aware of such associations. Systematic reviews and professional judgment were used to choose the items. Therefore, it was possible for men to be aware of a substance's link to an increased risk of infertility but not to an associated health issue or the opposite. Instead of making causative or directional assertions, the aim of this study was to merely ascertain whether males were aware of these correlations. We considered nine demographic variables. Two sample t tests or ANOVA were used as needed to assess the total knowledge scores for each covariate in the univariate analysis. Pearson's chi squared tests helped identify which groups were more interested in learning about fertility. Using the stepwise method, we adjusted for multiple comparisons of Benjamini Hochberg method, which considers the false discovery rate (Benjamini and Hochberg, 1995). P values were displayed after each model was performed with reliable standard errors. Stata 13.0 statistical software was used to do the statistical study.

3. RESULTS

At the time of the study, every participant was an adult who lived in the urban region (74.9%) of the Al Kharj Region. Most (73.4%) had college degrees and claimed to know something about fertility and male reproduction (a little or a lot). Table 1 details the participant's demographic traits. Table 2 displays fertility features and experiences and asked, “What percentages of reproductive problems are brought on by male variables, to the best of your knowledge?” The most typical comment was that it somewhat causes fertility issues. Less than half of men (46.9%) could list the constant potential risks regarding male infertility (Figure 1).

Men were more likely to learn about men's fertility through medical professionals and the internet than from TV and radio (Figure 2). The factors that impact male fertility are outlined in Table 3. In addition, Additional health issues for which infertile men are at higher risk are listed in Table 4. Fewer men were aware of the threat that obesity, high cholesterol and regular bicycling posed to fertility even if concerns like diabetes, drug use, STIs and injuries to the testicles were well known (Tables 5, 6).

Table 1 Demographic characteristics

		Count	Percentages
Groups of Age	19–26 years	38	9.6%
	23–26 years	122	30.8%
	27–33 years	63	15.9%
	34–45 years	58	14.6%
	46–50 years	55	13.9%
	51 years or older	59	14.9%

Where are you from?	Urban	300	75.9 %
	Rural	95	24.05 %
Educational qualification	Less than high school	14	3.5%
	Completed some high school	64	16.2%
	University graduate	280	70.8%
	Master	22	5.5%
	Ph. D	15	3.7%
Social Situation	Single	176	44.5%
	Married	210	53.1%
	Other (Divorced/widowed)	9	2.2%
Do you have children	No	199	50.3%
	Yes	196	49.2%

Table 2 Fertility characteristics and experiences

		Count	Percentages
How much do you think you know about male reproduction in general?	Not at all knowledgeable	46	11.6 %
	Slightly knowledgeable	88	22.2 %
	Somewhat knowledgeable	174	44.0 %
	Very knowledgeable	67	16.9 %
	Extremely knowledgeable	20	5.0%
What percentage of fertility issues are caused by male variables, to your best knowledge?	Does not at all cause fertility problems	35	8.8%
	Somewhat causes fertility problems	284	71.8 %
	Major cause of fertility problems	76	19.2 %
How concerned are you about your own fertility at this time?	Not at all concerned	198	50.1 %
	Slightly concerned	99	25.0 %
	Somewhat concerned	75	18.9 %
	Very concerned	14	3.5 %
	Extremely concerned	9	2.2 %
Have you or your partner ever had your fertility checked?	No, Not Married	166	42.0 %
	Neither of us	179	45.3 %
	Yes, for me	29	7.3 %
	Yes, for my wife	9	2.2 %
	Yes, for both of us	12	3.0%

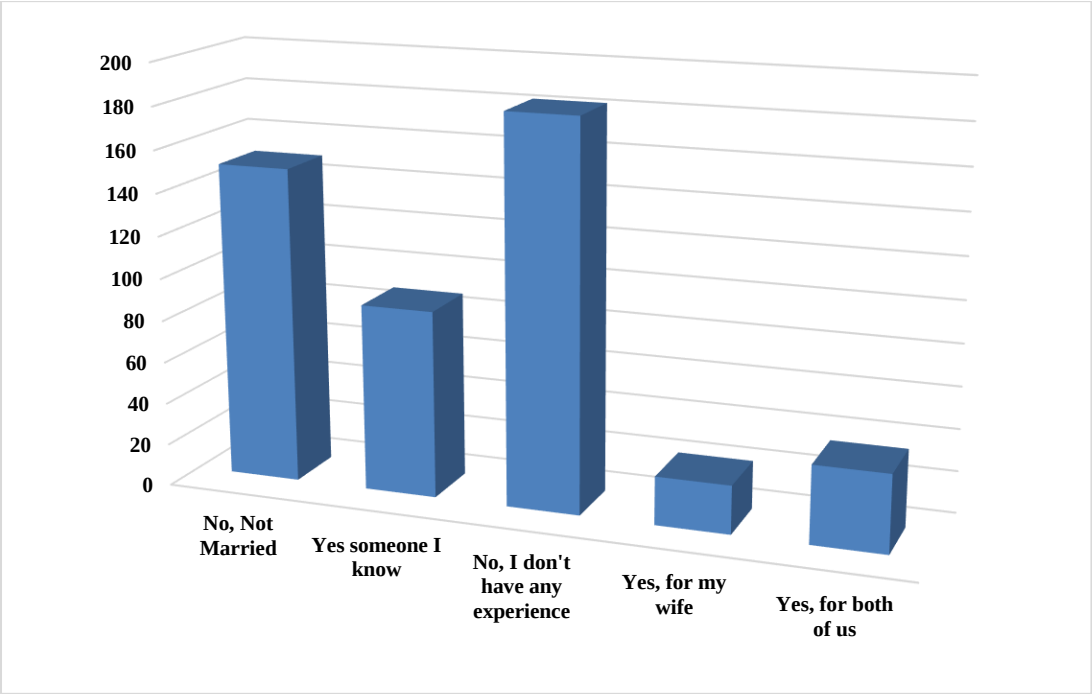

Figure 1 Cases having experience with fertility treatments

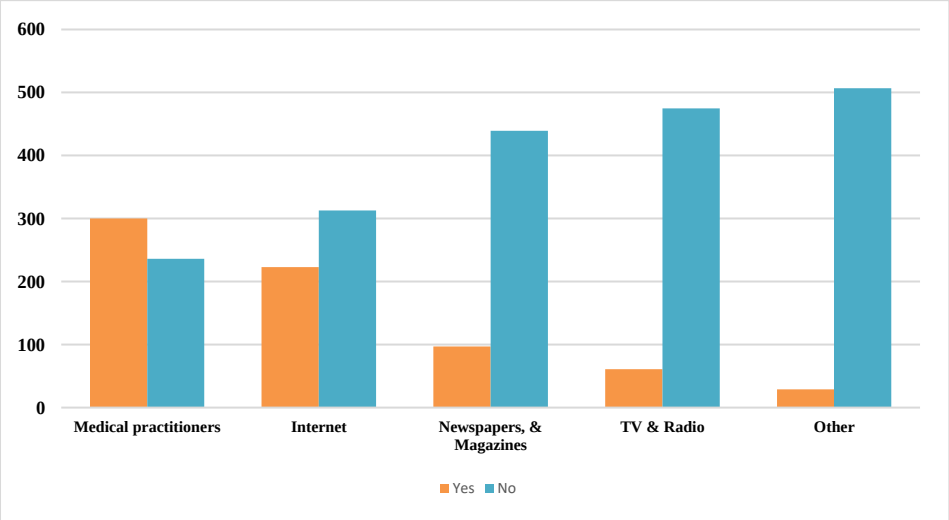

Figure 2 Participants' sources of information about men's fertility

Table 3 Demo-graphicsvs fertility knowledge: "factors that affect a man's fertility."

	Age Groups	Where do you live	Level of education	marital status	Do you have children	Would you like to have (more) children
Older than 45 years	.005*	0.931	.019*	.000*,	.000*	0.072
Alcohol consumption (10 drinks a week)	0.108	0.737	0.429	0.472	0.157	0.713
Radiationor chemotherapytreatment for cancer	0.371	0.822	0.535	0.141	.039*	0.417
Coffee (4 cups a day)	0.694	0.120	0.901	0.056	0.574	0.585
Dental cavity fillings	0.249	0.218	.003*	0.072	.046*	0.262

Diabetes	0.081	0.976	0.556	.023*	.000*	0.64
Riding horsesor Frequent bicycling	0.528	0.752	0.19	0.173	.040*	0.798
Frequent hot tub use	.017*	0.087	.028*	0.22	.038*	.037*
Frequent masturbation	0.195	0.346	0.196	0.524	0.893	.010*
Frequent sexual relations	0.091	0.742	0.446	0.157	0.270	.008*
Frequent laptop uses	0.341	0.52	0.176	0.699	0.779	0.060
Genetic abnormality	.000*	0.503	.021*	.000*	.000*	.001*
High cholesterol	0.277	0.595	.033*,	0.652	0.411	0.687
Lack of regular exercise	0.112	0.862	0.498	0.418	0.167	0.373
Overweight/obesity	0.113	0.592	.008*,	0.234	0.201	0.121
Injury or Pain to the testicles or scrotum	0.256	0.816	0.543	0.134	.045*,	0.502
Sexually transmitted infections	0.611	0.48	0.42	0.544	0.059	0.189
Size of testicles	0.309	0.589	0.236	0.073	.038*	0.651
Smoking cigarettes	0.186	.046*	.002*	0.167	0.086	0.193
Stress	0.065	0.097	0.2	0.847	0.703	0.27
Drug use as cocaine, narcotics, ormarijuana	.005*	0.737	0.389	.025*	.002*	0.093
Work out supplements	.002*	0.124	0.131	.040*	.007*	0.776
X rays	.003*	0.618	0.346	.005*	.000*	0.563
Alcohol consumption (10 drinks a week)	0.108	0.737	0.429	0.472	0.157	0.713

** The Chi-square statistic is significant at the .05 level*

Table 4 Demo-graphicsvs fertility knowledge: "Health issues that increase the risk of male infertility."

	Age Groups	Where do you live	Level of education	marital status	Do you have children	would you like to have (more) children
Arthritis	.462	.755	.024*	.058	.018*	.166
Being underweight	.028	.346	.925	.085	0.141	.717
Cardiovascular disease	.438	.672	.386	.132	0.431	0.661
Depression	.760	.294	.121	.363	0.638	.539
Diabetes	.534	.640	.745	.072	0.176	0.840
Fever	.511	.424	.659	.939	0.448	0.213
Insomnia	.057	.991	.728	.150	.004*	0.644
Obesity	.195	.168	.304	.709	0.853	0.501
Prostate cancer	.638	.108	.692	.882	0.754	.452
Sexually transmitted infections	.625	.749	.666	.185	0.857	.521
Testicular cancer	.468	.875	.469	.483	0.054	.391

**At the.05 level, the Chi-square statistic is significant*

Table 5 Fertility characteristics and experiences vs fertility knowledge: "factors that affect a man's fertility."

	How knowledgeable you are about male reproduction?	To what extent male factors contribute to fertility problems?	How concerned are you about your own fertility at this time?	Have you, or a partner, ever been assessed for fertility problems?	Have you ever had any experience with treatment for fertility problems?	Have you ever received treatment for any other medical disorders or illnesses about which you were warned that it might have an impact on your fertility?
Older than 45 years	0.095	.027*	.000*	.000*	0.177	0.079
Drinking alcohol	.003*	.016*	0.269	0.854	0.157	0.369
Chemotherapy or radiation therapy for cancer	0.1	.000*	0.601	.006*	.034*	0.473
Coffee (4 cups a day)	.009*	0.918	0.609	0.116	0.677	0.23
Dental cavity fillings	.000*	0.449	.033*	0.118	0.795	0.895
Diabetes	.017*	0.154	0.591	0.145	0.192	0.924
Riding horses or Frequent bicycling	.021*	0.513	0.438	0.38	0.939	0.194
Frequent hot tub use	.003*	.036*	0.764	0.18	0.123	0.989
Frequent masturbation	0.128	0.358	0.457	0.359	0.08	0.413
Frequent sexual relations	0.726	0.460	0.081	0.649	0.191	0.387
Frequent laptop uses	0.053	0.328	0.395	0.121	0.692	0.389
Genetic abnormality	.004*	.001*	0.506	.000*	.011*	0.631
High cholesterol	.001*	0.156	0.138	0.375	0.316	0.896
Lack of regular exercise	.041*	0.191	0.485	0.273	0.314	0.412
Overweight/obesity	.000*	.048*	0.38	.023*	0.113	0.309
Suffering from testicular or scrotal pain	.007*	.041*	0.968	0.142	0.054	0.772
Sexually transmitted infections	.018*	.005*	0.119	.050*	.009*	0.222
Size of testicles	0.212	0.910	0.115	0.431	0.827	0.414
Smoking cigarettes	0.235	.018*	0.881	.040*	0.827	0.209
Stress	.003*	0.074	.024*	0.54	.042*	0.068
using substances like cocaine, narcotics, or marijuana	0.093	.001*	0.415	0.079	0.116	0.06
Work out supplements	.028*	0.556	0.363	0.092	0.671	0.631
X rays	.036*	0.158	0.912	0.085	1	0.405
Older than 45 years	0.095	.027*	.000*	.000*	0.177	0.079
Alcohol consumption (10 drinks a week)	.003*	.016*	0.269	0.854	0.157	0.369

Radiation or chemotherapy treatment for cancer	0.1	.000*	0.601	.006*	.034*	0.473

**The Chi-square statistic is significant at the .05 level*

Table 6 Fertility characteristics and experiences vs fertility knowledge: "Health issues that increase the risk of male infertility."

	How knowledgeable you are about male reproduction?	To what extent male factors contribute to fertility problems?	How worried are you currently about your own fertility?	Have you or your partner ever had your fertility checked?	Have you ever had any experience with treatment for fertility problems?	Have you ever received medical care for any other ailments or disorders about which you were warned that it might impair your fertility?
Arthritis	0.081	0.373	0.084	0.183	0.853	0.467
Being underweight	0.072	.048*	.015*	.020*	.002*	0.129
Cardiovascular disease	0.323	0.844	0.277	0.581	0.609	0.41
Depression	.010*	0.455	0.548	0.6	0.31	0.623
Diabetes	.013*	0.136	0.454	0.427	0.862	0.121
Fever	0.377	0.747	0.248	0.078	0.211	0.719
Insomnia	0.188	0.579	0.812	0.479	0.71	0.835
Obesity	.008*	0.450	0.915	0.648	0.747	0.313
Prostate cancer	0.271	0.383	0.781	0.111	0.155	0.888
Sexually transmitted infections	0.258	0.106	0.93	0.058	0.062	0.642
Testicular cancer	0.529	0.403	0.396	0.146	0.122	0.755

4. DISCUSSION

The better that we're able to tell, this is the first study in Saudi Arabia that, although addressing worries about health issues and risk factors connected with male infertility, focuses solely on men's perceptions of male fertility. Saudi men have a poor conception of their own fertility. Men's perceptions of fertility were likewise found to be generally constant across most demographic groups. Most men were curious about the operation of their reproductive systems. Therefore, people are more likely to follow healthy behaviors to increase their own fertility if they have more awareness about fertility.

Understanding men's preferences is important because these preferences can impact a couple's decision to have children (Benjamini and Hochberg, 1995). Evidence reveals gaps in our understanding of male fertility (Hammarberg et al., 2017; Pedro et al., 2018) as seen in past studies and analyses on how men and women perceive knowledge of fertility (Boivin et al., 2018; Hviid Malling et al., 2020). The young men who participated in this study believed that primary and secondary schools' sexual education curricula should cover topics related to fertility. In order to encourage educated fertility decision making and avoid infertility on an individual level, numerous interventions at various stages of life are required. Other academics have emphasized the need to instilling relevant knowledge at appropriate ages (Vassard et al., 2016; Sylvest et al., 2018).

All of the participants were highly educated despite the researchers' intention to explore viewpoints from people with different educational backgrounds; as a result, the findings cannot be broadly applied to all men in the same age group. Our study is one of the first to provide insights into the existing understanding of men's fertility because it exclusively enrolled men. We found clear knowledge gaps in the general public, but further study is required to support these conclusions.

5. CONCLUSION

Our results explain men's knowledge and information. Increased knowledge about fertility can lower the chance of infertility and the resulting physical, psychological and monetary consequences. It can also enhance general health through the early detection of related medical illnesses.

Acknowledgments

This publication was supported by the Deputyship of research and innovation at Prince Sattam Bin Abdulaziz University, Al-Kharj, Saudi Arabia. In addition, we thank those who participated and contributed to the study.

Authors' Contributions

All authors contributed to the research and/or preparation of the manuscript. Ali Hassan A Ali (orcid.org/0000-0002-1195-5684) and Mohammed H Karrar Alsharif (orcid.org/0000-0001-5507-4208) participated in the study design and wrote the first draft of the manuscript. Salman S Bin Ofisan (https://orcid.org/0000-0003-1291-913X), Bandar Suliman S AlSultan and Ali Y Alali (orcid.org/0000-0002-3403-8299) collected and processed the samples. Abdul Rahman Mesfer Aldawsari (orcid.org/0000-0002-1949-611X), Ammar H Alenazi (orcid.org/0000-0002-8127-3734), Talal Abdullah Alharbi and Abubaker Y Elamin (orcid.org/0000-0002-4409-6652) participated in the study design and performed the statistical analyses. All authors read and approved the final manuscript.

Ethics Approval

This work was in compliance with Ethics Committee of Prince Sattam bin Abdulaziz University Institutional Review Board (PSAU-2022 ANT 70/43PI).

Funding

This study has not received any external funding.

Conflict of interest

The authors declare that there is no conflict of interests.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

REFERENCES AND NOTES

1. Barratt CL, De Jonge CJ, Anderson RA, Eisenberg ML, Garrido N, Rautakallio HS, Krausz C, Kimmins SO, Bryan MK, Pacey AA, Tüttelmann F, Veltman JA. A global approach to addressing the policy, research and social challenges of male reproductive health. Hum Reprod Open 2021; 2021(1): hoab009.doi.Org/10.1093/hropen/hoab009
2. Baskaran S, Finelli R, Agarwal A, Henkel R. Diagnostic value of routine semen analysis in clinical andrology. Andrologia 2021; 53(2):e13614. doi.Org/10.1111/and.13 614
3. Benjamini Y, Hochberg Y. Controlling the false discovery rate: A practical and powerful approach to multiple testing. J R Stat Soc 1995; 57:289–300.
4. Boivin J, Koert E, Harris TO, Shea L, Perryman A, Parker K, Harrison C. An experimental evaluation of the benefits and costs of providing fertility information to adolescents and emerging adults. Hum Reprod 2018; 33(7):1247-1253. doi: 10.1093/humrep/dey107
5. Chachamovich JR, Chachamovich E, Ezer H, Fleck MP, Knauth D, Passos EP. Investigating quality of life and health related quality of life in infertility: A systematic review J PsychosomObstet Gynaecol 2010; 31(2):101-10. doi: 10.3109/0167482X.2010.481337
6. 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(8):2405-12. doi: 10.1093/humrep/des190
7. Daumler D, Chan P, Lo K, Takefman J, Zelkowitz P. Men's knowledge of their own fertility: A population-based survey examining the awareness of factors that are associated with male infertility. Hum Reprod 2016; 31(12):2781-2790. doi: 10.1093/humrep/dew265
8. Dudgeon MR, Inhorn MC. Men's influences on women's reproductive health: Medical anthropological perspectives. Soc Sci Med 2004; 59(7):1379-95. doi: 10.1016/j.socscimed.2003.11.035

9. Eisenberg ML, Shufeng L, Cullen MR, Baker LC. Increased risk of incident chronic medical conditions in infertile men: Analysis of United States claims data. FertilSteril 2016; 105(3):629-636. doi: 10.1016/j.fertnstert.2015.11.011
10. Hammarberg K, Collins V, Holden C, Young K, McLachlan R. Men's knowledge, attitudes and behaviours relating to fertility. Hum Reprod Update 2017; 23(4):458-480. doi: 10.1093/humupd/dmx005
11. Hanna E, Gough B. The social construction of male infertility: A qualitative questionnaire study of men with a male factor infertility diagnosis. Sociol Health Illn 2020; 42(3):465-480. doi: 10.1111/1467-9566.13038
12. HviidMalling GM, Schmidt L, Pitsillos T, Hammarberg K, Tyde NT, Friberg B, Jensen I, Ziebe S. Taking fertility for granted: A qualitative exploration of fertility awareness among young, childless men in Denmark and Sweden. Hum Fertil 2020; 1-12. doi: 10.1080/14647273.2020.1798516
13. Pedro J, Brandao T, Schmidt L, Costa ME, Martins MV. What do people know about fertility? A systematic review on fertility awareness and its associated factors. Ups J Med Sci 2018; 123(2): 71-81. doi: 10.1080/03009734.2018.1480186
14. Schlegel PN, Sigman M, Collura B, De Jonge CJ, Eisenberg ML, Lamb DJ, Mulhall JP, Niederberger C, Sandlow JI, Sokol RZ, Spandorfer SD, Tanrikut C, Treadwell JR, Oristaglio JT, Zini A. Diagnosis and treatment of infertility in men: AUA/ASRM guideline part I. Fertil Steril 2021; 115(1):54-61. doi: 10.1016/j.fertnstert.2020.11.015
15. Sylvest R, Koert E, Vittrup I, Birch Petersen K, Hvidman HW, Hald F, Schmidt L. Men's expectations and experiences of fertility awareness assessment and counseling. Acta Obstet Gynecol Scand 2018; 97(12):1471-1477. doi: 10.1111/aogs.13449
16. Vassard D, Lallemant C, Nyboe Andersen A, Macklon N, Schmidt L. A population-based survey on family intentions and fertility awareness in women and men in the United Kingdom and Denmark. Ups J Med Sci 2016; 121(4): 244-251. doi: 0.1080/03009734.2016.1194503