CHAPTER

Way forward 13

Rehana Rehman

Department of Biological & Biomedical Sciences, Aga Khan University, Karachi, Pakistan

Chapter outline

Fertility awareness

In our society, fertility awareness (FA) is deficient, since cultural and religious factors increase the prevalence of misconceptions and myths. Core factors encompass low education, persistent health-related issues, scarcity of resources for well-being, nonexistence of a developed public health system, and inadequate coverage by insurance policies. Contributing factors include poor access to fertility options, scarce knowledge about risk factors for infertility, and health warnings of postponing childbirth (Fig. 13.1).

According to a study conducted in Pakistan, the reported prevalence of infertility is approximately 22% with 4% primary and 18% secondary infertility.[1] The cultural and religious perspective about assisted reproductive technologies is also unclear, resulting in reduced acceptability.[1]

Sufficient knowledge about infertility can urge young couples to seek timely medical care. We, therefore, recommend that infertile couples should be guided to approach the right person at the right time. Theinfertility clinics must have a list of relevant books and articles in local languages, audiovisuals, brochures, as well as the services of counselors who deals with fertility-related matters of individuals of different educational status. Additionally mass communication should play a very

Subfertility. https://doi.org/10.1016/B978-0-323-75945-8.00013-X
© 2021 Elsevier Inc. All rights reserved.

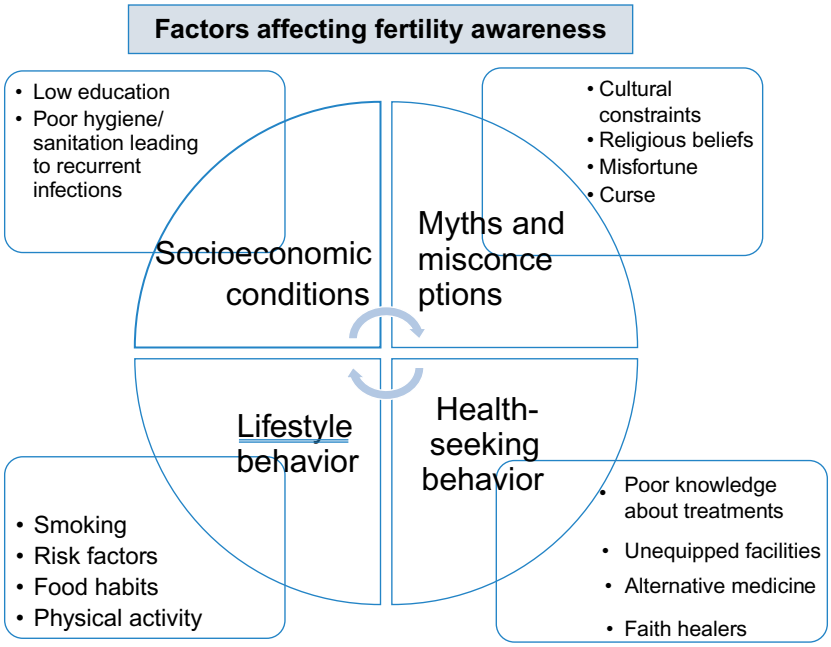


FIG. 13.1

Factors effecting fertility awareness.

effective role to address misconceptions, myths, and religious taboos through health shows and discussion forums with popular celebrities/health ambassadors. Support of religious authorities should also be obtained through sensitization meetings, so as to research and clarify any misconceptions at different forums portraying the correct Islamic views on treatment options such as IVF, for better acceptability.[1]

Role of healthcare professionals: First line of contact

In United Kingdom, Germany, and other developed countries, counseling of infertile couples and diagnostic evaluation come under the domain of primary care physicians. Counseling is offered at the time of first consultation and during the procedure by a person/specialist/psychologist who has a limited role in the management of the couple.[2] According to the American Society for Reproductive Medicine (ASRM), these counseling techniques offered on case-to-case basis will enable the couples to face physical and emotional challenges of infertility and its treatment.[3] Measures to improve general health through lifestyle modifications should also be included in this process. Comprehensive knowledge of the counselor and counseling skills can therefore decrease the perceived stress of subfertile couples and, therefore, improve treatment consequences.[4] Once counseled and diagnosed properly, the couple can be offered the first line of treatment, failing which immediate referral is planned.

Unfortunately, a majority of subfertility patients belong to developing countries, where negative consequences of childlessness are more as compared to developed countries.[5] Fertility awareness is minimal; cultural limitations, treatable recurrent infections, poor access to health facilities, and lack of appropriate counseling pose a serious threat to fertility. Access to newer technologies is rare, being costly and limited to big cities, making it unaffordable for a majority. Insignificant resources and low commitment of the government darken the scenario further. We postulate that the healthcare providers in primary care settings, being the first line of contact with the couple, can play a pivotal role to prevent infertility. Awareness and counseling sessions in the initial stages educate the patients about risk factors, which facilitate screening for and treating preventable causes, thus promoting patient compliance since "Beauty has no age; Fertility does."[5]

Counseling may be supported through print media (brochures) and where facilities exist, online modules and awareness workshops. If the couple does not conceive in a year's time, the healthcare professional should proceed with prompt referral to infertility specialist.

Fertility in primary healthcare settings: Challenges and solutions

Infertility treatment in low socioeconomic countries is a stand-alone. Knowing the status of education and prevention in developing countries, efforts are required at national level to develop administrative guidelines, to incorporate infertility into primary-level reproductive healthcare programs. For the successful inclusion of infertility diagnosis in these circumstances, it is necessary that the knowledge and skills of healthcare workers should be updated through ongoing, regular training programs. Sufficient facilities should also be made available for routine investigations, since early identification of cause and prompt treatment can minimize complications of procedures. While the diagnosis and treatment of infertility are comparatively expensive, it is recommended that more advanced, operational, secure, and cost-effective ART strategies should be proposed by public and private sectors.[6] A possible solution can be government's initiatives to pledge low-cost IVF programs, supplemented with funding from international agencies and other resources. Agencies from the private sectors should also be invited to join hands to address awareness issues and mass communication to improve the quality of care for subfertility.[7]

WHO recommendations and fertility counseling

To address fertility issues in the broader concept of medical, social, cultural, and religious dictums, it is a prerequisite that all activities are integrated at three levels, namely personal, interpersonal, and social.[1] World Health Organization (WHO) and Human Fertilization and Embryology Authority (HFEA) recommend that instead of individuals, couples seeking fertility treatment should be counseled.[8] Both partners should be approached together and counseled so that they accept

one another's feelings and face challenges collectively. Where cultural constraints prevail, individual counseling may additionally be done to reduce stress[9] in infertile women. Counseling services and materials should be available, depending upon the educational status of couples/individuals and local circumstances/languages. Keeping in mind the diverse counseling needs of infertile couples, options of a number of suitable psychosocial provisions and counseling intermediations[10] come up. At personal level, steps to improve preventative behavior through awareness programs will help prevent the treatable. According to the recommendations of WHO, "*Public awareness of infertility and its causes should be increased to improve preventative behavior and to diminish the stigmatization and social exclusion of infertile men and women*."[11] Research has found that being open about infertility and seeking support from outside can help both men and women cope better with emotional distress.[12] Social support comes from friends, family, and support groups, since they allow one to be better understood; to share feelings and emotions that could not have been shared anywhere else. A time and cost-efficient method of group counseling can be organized in the form of small groups to reduce social isolation, educate couples, discuss their problems, share experiences, convey information, teach and practice relaxation skills, and then identify couples for further psychological support.[13] Access to helpline maintains confidentiality in a two-way communication process and helps to remove misconceptions contributing to behavior change.[14]

Advanced counseling

Reproductive health and the field of subfertility can additionally benefit from the specialized services of a health coach, an individual who fills the gap between patient and doctor, to impart knowledge to the patient for improved attitude and practices of self-care. Once the diagnosis of infertility is established, couples should be counseled in detail on treatment choices available. For those who opt for IVF/ICSI, a detailed discussion is required on the nature of problem, chances, possibilities, and assistances of IVF in agreement with the current Human Fertilization and Embryology Authority (HFEA) code of practice.[2] To improve compliance, they should be informed about the length of intervention, that a complete cycle of IVF comprises of downregulation, ovarian stimulation, ovulation induction, embryo transfer, and cryopreservation of frozen embryo(s). Relaxation techniques including yoga meditation have been proved to reduce the perceived stress[15] supporting success after IVF or ICSI.[16]

Infertility clinic: First visit protocols

The first visit calls for a realistic, evidence-based protocol for the management of infertile couples rather than bombarding them with information overload.[17] A multidisciplinary approach is therefore required for a good clinical practice, following principles of care that the couple anticipates throughout treatment. This understanding

may help infertility specialists to recognize and support couples who have a greater possibility of emotional distress, during various phases of interventions.[18] It includes the following.

History taking, examination, and routine investigations

History taking and examination of both partners individually and then collectively with focus on duration of infertility, number of previous ART treatment cycles, treatment protocols, results of fertilization and psychological adjustment throughout the cycle,[18] followed by routine investigations (Tables 13.1–13.6).

Counseling is required at each step of procedure to promote compliance.

Table 13.1 Infertility management protocol: history of female partner.

S. no.	History	Inclusions
1	Present history	• Elements of current problem, length of infertility in years, age, occupation • Associated conditions of vaginal/cervical discharge, hair growth, acne, breast change, hot flushes, change in dietary habits, symptoms of diabetes, hypertension, history of drugs, smoking, consumption of alcohol, and intake of caffeine
2	Menstrual history	• Onset of menarche, duration, and frequency of the cycle, relevant complaints
3	Obstetric history	• Previous conceptions (gravidity), parity, miscarriages • Induced abortion and its complications
4	Contraceptive history	• Type of contraceptives, duration of use

5	Sexual history	• Living together
		• Enough time for relation
		• Knowledge about timing of relation
		• Relevant complaints associated:
		  • Difficult coitus
		  • Pain during coitus

6	Past history	• Medical: rubella status, pelvic inflammatory diseases, tuberculosis • Surgical: removal of ovarian cysts, appendicectomy, open/laparoscopic laparotomy, previous cesarean section, cervical conization

7	Family history	• Especially important in cases of subfertility:
		  • PCOS and endometriosis, cousin marriages
		  • Diabetes mellitus, hypertension, twin's birth, breast cancer

Adopted from Kamel R: Management of the infertile couple: an evidence-based protocol, Reprod Biol Endocrinol 8(1):21, 2010. https://doi.org/10.1186/1477-7827-8-21.

Table 13.2 Infertility management protocol: history of male partner.

S. no.	History	Inclusions
1	Present history	• Age of male partner • Profession • Reports of previously conducted semen analysis • Breast enlargement • Associated conditions: symptoms of diabetes, hypertension, history of drugs, smoking, consumption of alcohol, and caffeine drinking
2	Sexual history	• Frequency, timing, erectile problem • Ejaculation dysfunction • Decrease of libido • Previous marital history, extramarital sexual activities
3	Medical history	• Mumps infection • Respiratory/gastrointestinal tuberculosis • Sexually transmitted diseases • Undescended testis

4	Contraceptive history	• Any method of contraception employed:
		  • Temporary (condom)
		  • Permanent (vasectomy)

5	Surgical history	• Appendectomy • Repair of inguinal hernia • Suspension surgeries of the urinary bladder neck
6	Family history	• Relevant medical and surgical histories

Adopted from Kamel R: Management of the infertile couple: an evidence-based protocol, Reprod Biol Endocrinol 8(1):21, 2010. https://doi.org/10.1186/1477-7827-8-21.

Counseling on lifestyle modifications

- Smoking: If required, female smokers should be *referred to a smoking cessation program* since both active and passive smoking influence fertility. The impact of smoking on general health and sperm parameters should also be informed.[19]
- Folic acid supplementation and other "*natural therapies can be added if prescribed by the physician*."
- Obesity: *Women with a body mass index (BMI)* $\geq$ *30* should be counseled *to reduce weight* to increase the response to infertility treatment and conception. *A healthy lifestyle with good eating habits and regular physical activity* should be emphasized. On the same note, *men with a BMI* $\geq$ *30* should be warned *to reduce weight* to improve fertility.[20–22]
- Women with *BMI* $<$ *19* should be advised *to increase body weight*.
- Frequency and timing of sexual intercourse: Couples should be educated about "*timed sexual intercourse*" to increase the chance of pregnancy.
- Men should be warned to *avoid tight underwear.*

Table 13.3 Infertility management protocol: general physical examination of female partner.

S. no.	Examination	Inclusions
1	General	• Estimation of blood pressure • Body height and weight (BMI) = ratio of weight (kilograms) with height (square meters) • Thyroid functions • Secondary sexual characteristics
2	Breasts	• Development • Related pathology • Occult galactorrhea
3	Chest	• Respiration • Circulatory system
4	Abdominal	• Discoloration of the skin (striae) • Surgical scars • Mass • Enlarged organ • Fluid in the abdomen (ascites)
5	Genital	• External examination • Per vaginal examination • Per speculum examination

Adopted from Kamel R: Management of the infertile couple: an evidence-based protocol, Reprod Biol Endocrinol 8(1):21, 2010. https://doi.org/10.1186/1477-7827-8-21.

Table 13.4 Infertility management protocol: general physical examination of male partner.

S. no.	Examination	Inclusions
1	General	• Blood pressure • Body height and weight (BMI) = ratio of weight (kilograms) with height (square meters) • Arm span assessment • Secondary sexual characteristics • Thyroid gland function
2	Breasts	• Gynecomastia
3	Abdominal	• Discoloration of the skin (striae) • Surgical scars • Mass in lower abdomen • Undescended testis • Fluid in the abdomen (ascites)
4	Genital	• Examination of external genitals • Testis • Epididymis and vas deferens • Per rectal (PR) examination for prostate enlargement

Adopted from Kamel R: Management of the infertile couple: an evidence-based protocol, Reprod Biol Endocrinol 8(1):21, 2010. https://doi.org/10.1186/1477-7827-8-21.

Table 13.5 Investigation protocols of a male partner with 12 months of infertility.

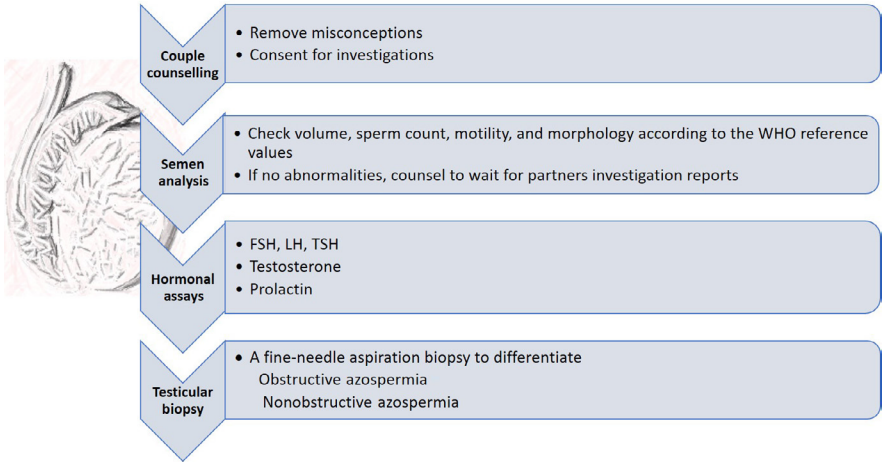
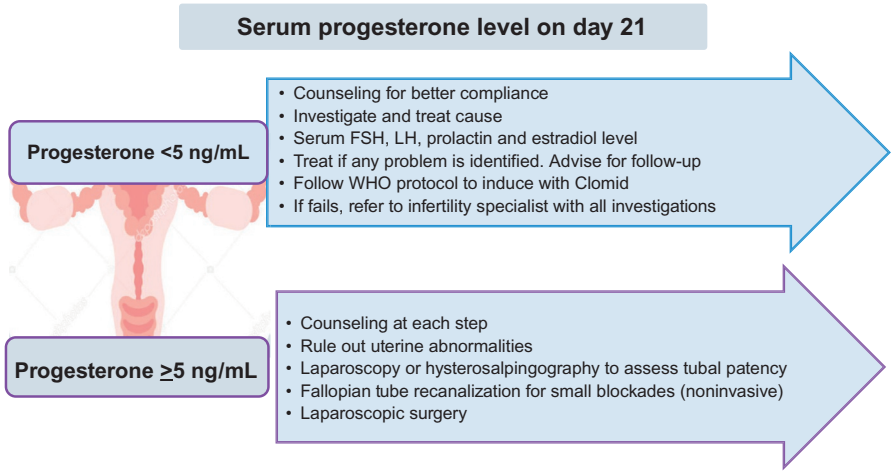


Table 13.6 Investigation protocols of a female partner with 12 months of infertility.



https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4609318

- Occupation: *Appropriate advice* should be offered.
- Couples should be told to *avoid over-the-counter and recreational drugs*.[2]
- Alcohol: *Both partners* should be informed about the *hazards of alcohol intake*, and "women who are trying to become pregnant should be informed that drinking no more than 1 or 2 units of alcohol once or twice per week and avoiding episodes of intoxication reduce the risk of harming a developing fetus." "*Men should be informed that excessive alcohol intake is detrimental to semen quality*" (Fig. 13.2).[2]

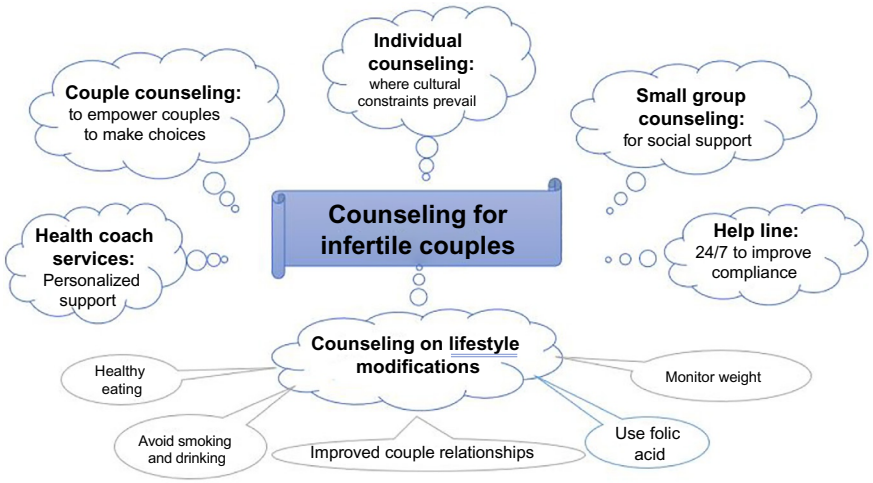


FIG. 13.2

Counseling of infertile couples.

Resolution to infertility

Resolution to infertility may or may not be a successful pregnancy. Finding resolution to infertility is the decision followed by a list of goals, options, plans, and strategies a couple selects for himself and his life partner. This is a difficult choice and a long journey that needs emotional and psychological support from friends, family, and the infertility specialists/counselors. A decision of adoption or to live childfree is yet another important resolution that has to be thought and discussed by the couple a number of times before putting into process.[23]

References

1. Ali S, Sophie R, Imam AM, et al. Knowledge, perceptions and myths regarding infertility among selected adult population in Pakistan: a cross-sectional study. *BMC Public Health.* 2011;11(1), 760.
2. Women's NCCf, Health Cs. *Fertility: Assessment and Treatment for People With Fertility Problems.* RCOG Press; 2004.
3. Burnett JA. Cultural considerations in counseling couples who experience infertility. *J Multicult Couns Dev.* 2009;37(3):166–177.
4. Yazdani F, Elyasi F, Peyvandi S, et al. Counseling-supportive interventions to decrease infertile women's perceived stress: a systematic review. *Electron Physician.* 2017;9(6):4694.
5. Pedro J, Brandão 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.

6. Adageba R, Maya E, Annan J, Damalie F. Setting up and running a successful IVF program in Africa: prospects and challenges. *J Obstet Gynaecol India.* 2015;65(3):155–157.
7. Wiltshire A, Brayboy LM, Phillips K, Matthews R, Yan F, McCarthy-Keith D. Infertility knowledge and treatment beliefs among African American women in an urban community. *Contracep Reprod Med.* 2019;4(1), 16.
8. Human Fertilisation and Embryology Authority Human Fertilisation and Embryology Authority Sixth Annual Report, 1997. 1997.
9. Klock SC. Psychosocial evaluation of the infertile patient. In: Covington SN, Burns LH, eds. *Infertility Counseling: A Comprehensive Handbook for Clinicians.* Cambridge University Press; 2006:83–96.
10. Jafarzadeh KF, Ghahiri A, Zargham BA, Habibi M. Exploration of the counseling needs of infertile couples: a qualitative study. *Iran J Nurs Midwifery Res.* 2015;20(5):552–559.
11. Vayena E, Rowe PJ, Griffin PD. *Current Practices and Controversies in Assisted Reproduction: Report of a Meeting on Medical, Ethical and Social Aspects of Assisted Reproduction, held at WHO Headquarters in Geneva, Switzerland.* World Health Organization; 2002.
12. Patel A, Sharma P, Kumar P. Role of mental health practitioner in infertility clinics: a review on past, present and future directions. *J Hum Reprod Sci.* 2018;11(3):219.
13. Van den Broeck U, Emery M, Wischmann T, Thorn P. Counselling in infertility: individual, couple and group interventions. *Patient Educ Couns.* 2010;81(3):422–428.
14. Bartlam B, McLeod J. Infertility counselling: the ISSUE experience of setting up a telephone counselling service. *Patient Educ Couns.* 2000;41(3):313–321.
15. Nekavand M, Mobini N, Roshandel S, Sheikhi A. A survey on the impact of relaxation on anxiety and the result of IVF in patients with infertility that have been referred to the infertility centers of Tehran university of medical sciences during 2012–2013. *Nurs Midwifery J.* 2015;13(7):605–612.
16. Valiani M, Abedian S, Ahmadi SM, Pahlavanzade S. The effects of relaxation on outcome treatment in infertile women. *Complement Med J Fac Nurs Midwifery.* 2014;4(2):845–853.
17. Kamel RM. Management of the infertile couple: an evidence-based protocol. *Reprod Biol Endocrinol.* 2010;8(1), 21.
18. Moura-Ramos M, Gameiro S, Canavarro MC, Soares I, Almeida-Santos TJ. Does infertility history affect the emotional adjustment of couples undergoing assisted reproduction? The mediating role of the importance of parenthood. *Br J Health Psychol.* 2016;21(2):302–317.
19. Rehman R, Zahid N, Amjad S, Baig M, Gazzaz ZJ. Relationship between smoking habit and sperm parameters among patients attending an infertility clinic. *Front Physiol.* 2019;10:1356.
20. Hart K, Tadros NN. The role of environmental factors and lifestyle on male reproductive health, the epigenome, and resulting offspring. *Iran J Nurs Midwifery Res.* 2019;61(2):187–195.
21. Collins GG, Rossi BV. The impact of lifestyle modifications, diet, and vitamin supplementation on natural fertility. *Fertil Res Pract.* 2015;1(1):11.
22. Rehman R, Hussain Z, Fatima SS. Effect of weight status on pregnancy outcome in intra cytoplasmic sperm injection. *Iran J Reprod Med.* 2013;11(9):717.
23. Siddiqui A, Desai NG, Sharma SB, Aslam M, Sinha UK, Madhu SV. Association of oxidative stress and inflammatory markers with chronic stress in patients with newly diagnosed type 2 diabetes. *Diabetes Metab Res Rev.* 2019;35(5), e3147.