Scientific Research Publishing

Open Journal of Urology, 2025, 15(11), 555-562
https://www.scirp.org/journal/oju
ISSN Online: 2160-5629
ISSN Print: 2160-5440

Male Infertility in Burkina Faso: Analysis of Epidemiological, Diagnostic, and Therapeutic Profiles in a University Hospital

Clotaire Alexis Marie Kiemdiba Donega Yaméogo[1*], Hassami Sawadogo[1], Brahima Kirakoya[1], Abdoul-Karim Pare[2], Soutongnoma Abdoul Euloge Kagambega[1], Adama Ouattara[2], Fasnewinde Aristide Kabore[1]

[1]Urology Division, Yalgado Ouedraogo University Teaching Hospital, Ouagadougou, Burkina Faso
[2]Urology Division, Souro Sanou University Teaching Hospital, Bobo-Dioulasso, Burkina Faso
Email: *yameogoclotaire@yahoo.fr

How to cite this paper: Yaméogo, C.A.M.K.D., Sawadogo, H., Kirakoya, B., Pare, A.-K., Kagambega, S.A.E., Ouattara, A. and Kabore, F.A. (2025) Male Infertility in Burkina Faso: Analysis of Epidemiological, Diagnostic, and Therapeutic Profiles in a University Hospital. *Open Journal of Urology*, **15**, 555-562.
https://doi.org/10.4236/oju.2025.1511056

Received: October 24, 2025
Accepted: November 18, 2025
Published: November 21, 2025

Abstract

Background: Male infertility remains understudied in sub-Saharan Africa despite its significant psychosocial impact. This study provides a detailed analysis of male infertility profiles in Burkina Faso. **Methods:** A cross-sectional retrospective study was conducted from January 2021 to December 2023, including 203 patients presenting with male infertility. Data including sociodemographic characteristics, clinical profiles, semen parameters, and therapeutic outcomes were analyzed. **Results:** The hospital consultation frequency for male infertility was 3.24%. The mean age was 36.5 years, with a predominance of primary infertility (a couple that has never conceived after one year of unprotected intercourse) (73.89%). Semen analysis revealed oligospermia in 50.24% of cases and azoospermia in 28.57%. Varicocele was the most frequent clinical finding (45.3%). Antioxidant therapy resulted in pregnancy in 5.6% of cases. A sedentary lifestyle showed a significant association with necrospermia ($p = 0.002$) and abnormalities in sperm concentration ($p = 0.001$). **Conclusion:** Male infertility in Burkina Faso primarily affects young men with severe semen abnormalities. Modifiable risk factors, particularly sedentary behavior, appear as crucial targets for prevention strategies.

Keywords

Male Infertility, Semen Analysis, Varicocele, Antioxidants

1. Introduction

Male infertility is responsible for approximately 40% - 50% of infertility cases

worldwide [1]. In Sub-Saharan Africa, it constitutes a heavy psychosocial burden, often a source of marital conflict and stigma [2]. Yet, comprehensive data on the subject remain scarce in West Africa, with studies focusing predominantly on female factors [3].

The WHO recognizes infertility as a global health problem, with high prevalence [4]. In Burkina Faso, male factors are implicated in approximately 17.28% of infertile couples [5]. The understanding of male infertility has evolved towards a multifactorial model, integrating genetic, environmental, infectious, and lifestyle-related causes [6]. The impact of modifiable risk factors, such as sedentary lifestyles and toxic exposures, on spermatogenesis is increasingly documented [7] [8].

This study aims to address a knowledge gap by providing a comprehensive analysis of the epidemiological, diagnostic, and therapeutic aspects of male infertility in a university hospital center in Burkina Faso.

2. Methods

A retrospective cross-sectional study was conducted in the Urology-Andrology Department of the Yalgado Ouedraogo University Hospital (CHU-YO). The study period extended from January 1, 2021, to December 31, 2023. The study included 203 male patients presenting with infertility problems out of a total of 7652 consultations during the study period. Primary infertility was defined as the inability of a couple to achieve a pregnancy after at least 12 months of unprotected sexual intercourse. Data were extracted using a standardized collection form including sociodemographic characteristics, medical history, physical examination findings, paraclinical test results, and treatment modalities.

3. Results

During the three-year study period, 248 patients consulted for male infertility, representing a hospital frequency of 3.24%. Of these 248 patients, 203 met the inclusion criteria.

The mean age was 36.5 ± 8.59 years, with the 30 - 40 age group constituting the majority (55.67%). The distribution of patients by age group is illustrated in **Table 1**.

Table 1. Distribution of patients by age group.

Age Group	Number of Patients (N = 203)	Percentage (%)
[20 to 30 years[	34	16.75%
[30 to 40 years[	**113**	**55.67%**
[40 to 50 years[	39	19.21%
Over 50 years	17	8.37%
Total	**203**	**100%**

Civil servants (33.99%) and merchants (27.09%) represented the predominant occupational groups. Urban residence was reported by 82.27% of patients, and 92.12% were legally married.

We found 176 schooled patients (86.7%) in our study.

The following Figure 1 illustrates the distribution of patients by education level.

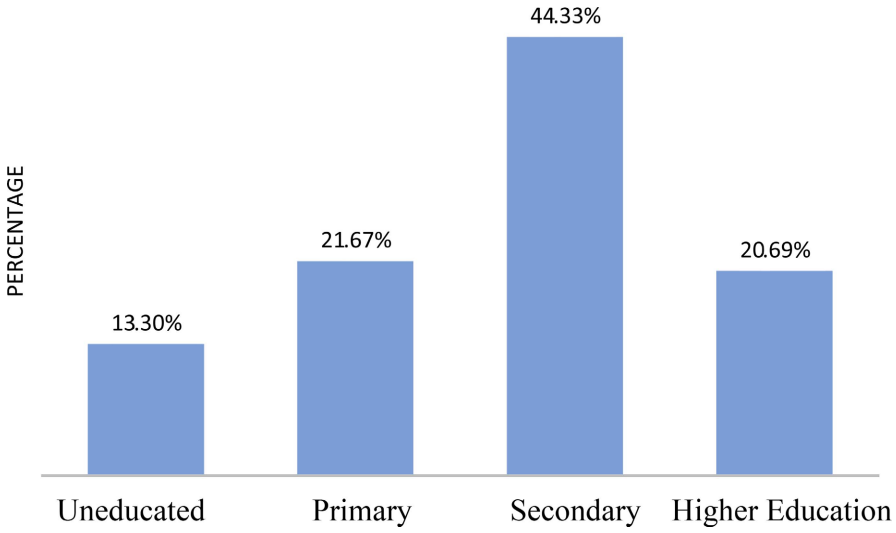

Figure 1. Distribution of patients according to educational level.

Primary infertility accounted for 73.89% of cases, with a mean infertility duration of 5.62 ± 4.04 years.

All 203 patients consulted for paternity desire; scrotal pain and decreased libido were the most represented associated consultation reasons, reported by 7.39% and 6.40% of patients, respectively.

Table 2 represents the distribution of associated consultation reasons.

Table 2. Associated consultation reasons.

Associated Complaint	Number	Percentage
Erectile Dysfunction	9	4.43%
Premature Ejaculation	3	1.48%
Decreased Libido	**13**	**6.40%**
Empty Scrotum	3	1.48%
Scrotal Pain	**15**	**7.39%**
Scrotal Heaviness	5	2.46%
Scrotal Swelling	1	0.49%

The mean frequency of sexual intercourse was 3 times per week.

A sedentary lifestyle (20.20%) and alcohol consumption (18.23%) represented the most common modifiable risk factors.

Sedentary behavior and alcohol consumption were the most represented, at

20.20% and 18.23% respectively. Table 3 illustrates the distribution of different risk factors.

Table 3. Distribution of risk factors found in patients.

Risk Factors	Number	Percentage
Prolonged heat exposure	18	8.87%
*Exposure to certain chemicals	26	12.81%
Alcohol	**37**	**18.23%**
Tobacco	**29**	**14.29%**
Radiation	9	4.43%
Sedentary Lifestyle	**41**	**20.20%**

*Chemicals (lead, pesticides, herbicides, and solvents).

The search for medical history revealed urinary schistosomiasis as the predominant infection (17.73%), followed by gonorrhea and mumps (8.87% each). Table 4 presents the distribution of different infections encountered in infertile men.

Table 4. Distribution of different infections found.

Type of Infection	Number	Percentage
Urethritis	13	6.40%
Orchiepididymitis	1	0.49%
Prostatitis	1	0.49%
Urinary Bilharzia	**36**	**17.73%**
Mumps	**18**	**8.87%**
Gonorrhea	**18**	**8.87%**
Mumps Orchitis	10	4.93%
*Other	3	1.47%

**Other = Meningitis.

Hypertension (23.33%) and sickle cell disease (16.66%) were the most frequent comorbidities. Surgical history highlighted genital trauma (44.74%) and inguinal hernia repair (23.68%).

Varicocele was the most prevalent clinical abnormality (45.3%), primarily bilateral (42.65%). Abnormal testicular size affected 27.45% of patients, with bilateral testicular hypotrophy representing 71.42% of these cases.

Semen analysis revealed that oligospermia affected 49,51% of patients, azoospermia 27.71%, and asthenospermia 16,34. Normal semen parameters were noted in 5.45% of patients. Table 5 shows the distribution of abnormalities observed in the spermogram.

Table 5. Distribution of abnormalities observed in the spermogram.

Category	Percentage (%)
Oligospermia	49.51
Azoospermia	27.71
Asthenospermia	16.34
Necrospermia	0.99
Normal spermogram	5.45

At spermocytogram, morphology was normal in 107 patients (76.97%), and teratospermia was found in 32 patients (23.02%). Teratospermia was most prevalent in the 50+ age group.

Flagellar abnormalities were the most common (24.3%), followed by head and midpiece abnormalities (22.5% and 11.2% respectively).

The sperm culture positivity rate was 31.46%, with *Ureaplasma urealyticum* (41.07%), *Staphylococcus aureus* (17.86%), and *Mycoplasma hominis* (16.07%) as the predominant isolates.

Hormonal assays revealed elevated FSH in 43.82% of tested patients, elevated LH in 18.03%, and elevated testosterone in 25%. Among azoospermic patients, secretory causes were identified in 12 cases (10 peripheral, 2 central) and excretory causes in 8 cases.

Antioxidant therapy (arginine, carnitine, zinc, vitamin E) constituted the main treatment modality (49.75%), while antibiotic therapy alone was administered to 7.88% of patients. Varicocelectomy alone was performed in 12.31% of patients. 21.69% of patients underwent varicocelectomy combined with antioxidant treatment. 8.37% of patients were referred to an assisted reproduction center.

At one year, the achievement of pregnancy was documented in 19 couples (9.36%). Antioxidant therapy alone was responsible for 11 pregnancies (5.42%), varicocelectomy for 2 pregnancies, and the combination of varicocelectomy + antioxidant treatment for 6 pregnancies.

Statistical analysis revealed significant associations between a sedentary lifestyle and both necrospermia ($p = 0.002$) and abnormalities in sperm concentration ($p = 0.001$). Tobacco or alcohol consumption was not significantly associated with semen parameters in our cohort.

4. Discussion

This study provides crucial insights into the profile of male infertility in Burkina Faso, highlighting several distinctive patterns with significant clinical implications.

The predominance of young patients (30 - 40 years) in our cohort reflects the social pressure for parenthood in this age group, which is consistent with findings from similar environments [9] [10]. The prolonged mean duration of infertility (5.62 years) underscores significant delays in seeking specialized care, potentially

reflecting cultural barriers and initial reliance on traditional medicine [5].

The high prevalence of severe sperm abnormalities, particularly oligospermia (49.51%) and azoospermia (27.71%), exceeds rates reported in some African studies [11] [12] but corresponds to patterns observed in resource-limited settings with a high infectious burden [13]. The predominance of primary infertility (73.89%) may reflect underreporting of secondary cases or different etiological patterns in our population.

Varicocele emerged as the most common physical finding (45.3%), consistent with its established role as a major reversible cause of male infertility [14].

The significant association between a sedentary lifestyle and sperm abnormalities represents a crucial finding. Sedentary behavior may contribute to testicular hyperthermia and oxidative stress, two established mechanisms impairing spermatogenesis [15] [16]. This modifiable risk factor warrants integration into prevention strategies and patient education. Public health initiatives should include counseling on the importance of regular physical activity, and workplace wellness programs promoting movement could be a viable strategy for primary prevention, especially in this predominantly urban cohort.

The high prevalence of genital infections, particularly *Ureaplasma urealyticum*, underscores the importance of comprehensive microbiological screening. These infections can induce chronic inflammation, sperm DNA fragmentation, and obstructive pathologies [17] [18]. The sperm culture positivity rate of 31.46% highlights the need for systematic bacteriological evaluation in infertile men.

The promising results with antioxidant therapy (pregnancy rate of 5.42%) support the growing evidence for managing oxidative stress in male infertility [19] [20]. The combination of arginine, carnitine, zinc, and vitamin E constitutes an antioxidant cocktail targeting multiple mechanisms of spermatogenesis and sperm function and represents a considerable therapeutic option in resource-limited settings.

5. Conclusion

This study depicts a concerning profile of male infertility in Burkina Faso, characterized by severe sperm abnormalities, a heavy infectious burden, and significant modifiable risk factors. The predominance of affected young men underscores the urgent need for targeted interventions. Future prospective multicenter studies integrating genetic and environmental assessments will help better elucidate the complex etiology of male infertility in West Africa.

Ethical Approval Statement

The research protocol was validated and accepted by the management of the CHU-YO, which granted us authorization for the study. Given the retrospective nature of the study, the requirement for individual patient consent was waived.

Acknowledgments

The authors thank the medical staff of the Urology-Andrology Department for

their support in data collection.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

[1] Frikh, M., Benaissa, M., Kasouati, J., Benlahlou, Y., Chokairi, O., Barkiyou, M., *et al.* (2021) Prévalence de l'infertilité masculine dans un hôpital universitaire au Maroc [Prevalence of Male Infertility in a University Hospital in Morocco]. *Pan African Medical Journal*, **38**, Article 46. https://doi.org/10.11604/pamj.2021.38.46.19633

[2] Fouda, J., Mekeme Mekeme, J., Nwaha Makon, A., *et al.* (2022) Aspects Épidémiologiques de l'Infertilité Masculine à l'Hôpital Central de Yaoundé [Epidemiological Aspects of Male Infertility at the Central Hospital of Yaoundé]. *Journal of Biomedical Science*, **23**, 151-153.

[3] Somé, E.N., Ilboudo, K., Cyriac, D., *et al.* (2016) Prévalence hospitalière et étiologie de l'infertilité féminine dans la ville de Ouagadougou [Hospital Prevalence and Etiology of Female Infertility in the City of Ouagadougou]. *Science et technique*, *Science de la santé*, **39**, 135-145.

[4] World Health Organization (2023) Infertility Prevalence Estimates, 1990-2021. World Health Organization. https://www.who.int/publications/i/item/978920068315

[5] Kirakoya, B., Barnabé, Z., Abdoul Karim, P., Aristide, K., Clotaire, Y. and Amélie, N. (2015) Epidemiological and Clinical Profile of Male Hypofertility in Consultation at the Urology-Andrology of Yalgado Ouedraogo Teaching Hospital (Burkina Faso). *Advances in Sexual Medicine*, **5**, 1-6. https://doi.org/10.4236/asm.2015.51001

[6] Methorst, C., Perrin, J., Faix, A. and Huyghe, E. (2023) Infertilité masculine, environnement et mode de vie [Male Infertility, Environment and Lifestyle]. *Progrès en Urologie*, **33**, 613-623. https://doi.org/10.1016/j.purol.2023.09.014

[7] Neto, F.T.L., Viana, M.C., Cariati, F., Conforti, A., Alviggi, C. and Esteves, S.C. (2024) Effect of Environmental Factors on Seminal Microbiome and Impact on Sperm Quality. *Frontiers in Endocrinology*, **15**, Article 1348186. https://doi.org/10.3389/fendo.2024.1348186

[8] Huyghe, E., Boitrelle, F., Methorst, C., Mieusset, R., Ray, P.F., Akakpo, W., *et al.* (2021) Recommandations de l'AFU et de la SALF concernant l'évaluation de l'homme infertile [AFU and SALF Recommendations for the Evaluation of the Infertile Male]. *Progrès en Urologie*, **31**, 131-144. https://doi.org/10.1016/j.purol.2020.09.011

[9] Kbirou, A., Jandou, I., Adnane, E., Mohammed, E., Moataz, A., Mohammed, D., *et al.* (2022) Profil épidémiologique et clinique de l'infertilité masculine: Étude observationnelle transversale descriptive et analytique [Epidemio-Logical and Clinical Profile of Male Infertility: A Descriptive and Analytical Cross-Sectional Observational Study]. *Sexologies*, **31**, 117-122. https://doi.org/10.1016/j.sexol.2021.05.004

[10] Ngalle, F.E., Mbouche, L., Mpah, E.M., Mekeme, J.M., Essomba, A., Nkolo, D.E., *et al.* (2023) Clinical and Morphological Profile of Male Infertility in 3 Reference Hospitals in the City of Douala in Cameroon. *African Urology*, **3**, 77-81. https://doi.org/10.36303/auj.0072

[11] Niang, L., Ndoye, M., Labou, I., Jalloh, M., Kane, R., Diaw, J.J., *et al.* (2009) Profil épidémiologique et clinique de l'infertilité masculine à l'hôpital général de Grand-Yoff, Sénégal: À propos de 492 cas [Epidemiological and Clinical Profile of Male Infertility at the Grand-Yoff General Hospital, Senegal: About 492 Cases]. *Basic and*

Clinical Andrology, **19**, 103-107. https://doi.org/10.1007/s12610-009-0019-x

[12] Halidou, M., Amadou Magagi, I., Zakou, A.R.H., *et al.* (2022) Infertilité Masculine à l'Hôpital National de Zinder: Aspects Épidémiologiques et Cliniques [Male Infertility at the National Hospital of Zinder: Epidemiological and Clinical Aspects]. *Journal of Biomedical Science*, **23**, 85-89.

[13] Saint, F., Huyghe, E., Methorst, C., Priam, A., Seizilles de Mazancourt, E., Bruyère, F., *et al.* (2023) Infections et infertilité masculine [Infections and Male Infertility]. *Progrès en Urologie*, **33**, 636-652. https://doi.org/10.1016/j.purol.2023.09.015

[14] Huyghe, E., Methorst, C. and Faix, A. (2023) Varicocèle et infertilité masculine [Varicocele and Male Infertility]. *Progrès en Urologie*, **33**, 624-635. https://doi.org/10.1016/j.purol.2023.09.003

[15] Jung, A. and Schuppe, H. (2007) Influence of Genital Heat Stress on Semen Quality in Humans. *Andrologia*, **39**, 203-215. https://doi.org/10.1111/j.1439-0272.2007.00794.x

[16] Jensen, T.K., Andersson, A., Jørgensen, N., Andersen, A., Carlsen, E., Petersen, J.ø.H., *et al.* (2004) Body Mass Index in Relation to Semen Quality and Reproductive Hormonesamong 1,558 Danish Men. *Fertility and Sterility*, **82**, 863-870. https://doi.org/10.1016/j.fertnstert.2004.03.056

[17] Askienazy-Elbhar, M., Dolivo, M., Izard, V., Jardin, A., Soufir, J., Auroux, M., *et al.* (1994) Infection génitale à chlamydia chez l'homme et retentissement sur la fécondité [Genital Chlamydia Infection in Men and Impact on Fertility]. *Andrologie*, **4**, 425-433. https://doi.org/10.1007/bf03034726

[18] Chang, S.B., Kim, T.J., Kim, T.H., Lee, S., Hong, Y.K., Park, D.S., *et al.* (2023) Impact of Microbial Infection on Sperm Parameters of Seminal Bacteria in Asymptomatic Subfertile Males. *Urogenital Tract Infection*, **18**, 82-92. https://doi.org/10.14777/uti.2023.18.3.82

[19] de Ligny, W., Smits, R.M., Mackenzie-Proctor, R., Jordan, V., Fleischer, K., de Bruin, J.P., *et al.* (2022) Antioxidants for Male Subfertility. *Cochrane Database of Systematic Reviews*, **5**, CD007411. https://doi.org/10.1002/14651858.cd007411.pub5

[20] Methorst, C., Faix, A. and Huyghe, E. (2023) Traitements médicaux de l'homme infertile [Medical Treatments for the Infertile Male]. *Progrès en Urologie*, **33**, 653-680. https://doi.org/10.1016/j.purol.2023.09.019