Article

Patterns of Infertility and Sociodemographic Characteristics Among Patients with Infertility Attending Benjamin Mkapa Hospital in Tanzania: Analytical Cross-Sectional Study

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Abstract: (1) Background: Infertility is a global health problem that affects one of six couples worldwide, leading to significant negative impacts on their quality of life. Despite numerous studies on infertility patterns and sociodemographic characteristics, there remains a lack of clarity on these aspects among patients seeking care in Tanzania. (2) Methods: This hospital-based analytical cross-sectional study aimed to determine infertility patterns and sociodemographic characteristics among 385 randomly selected male and female patients attending the Benjamin Mkapa Hospital. Structured interviews using a clinical proforma collected data on the patterns of infertility and sociodemographic characteristics of the participants. The analysis included descriptive statistics and logistic regression. (3) Results: The findings indicated that the dominant pattern of infertility for both male and female participants was secondary infertility, accounting for 59.00% (228). Multivariate logistic regression analysis for both male and female patients revealed sociodemographic characteristics of infertility: age (38–43) years, AOR 5.068, 95% CI 1.573–16.33, $p = 0.007$), and duration of cohabiting or marriage of more than 10 years (AOR 0.406,95% CI 0.189–0.873, $p = 0.021$). (4) Conclusion: Integrating reproductive health education on appropriate fertility age into the reproductive health package and enhancing fertility care in public hospitals in Tanzania is recommended.

Keywords: pattern of infertility; sociodemographic characteristics; Tanzania

1. Introduction

Infertility is a disease of the male and female reproductive system defined by the failure to establish clinical pregnancy after 12 months of regular unprotected sexual intercourse. Infertility may present as a primary or secondary disease. Primary infertility occurs when a woman has never been diagnosed with (or a man has never initiated) a clinical pregnancy and meets the criteria to be classified as having infertility. Secondary infertility occurs when a woman cannot establish (or a man cannot initiate) a clinical pregnancy but has previously been diagnosed with (or initiated) a clinical pregnancy [1].

Infertility is a global health problem that affects 1 of 6 people worldwide. Infertility is associated with various negative impacts on the quality of life of participants, including physical abuse, social stigma, marriage divorces, risk of multiple partners, and sexually transmitted diseases including HIV/AIDS [2–5].

Different studies have reported different patterns of infertility. Studies in Iran reported a higher prevalence of primary infertility (69.5%) than secondary infertility [6], while research conducted in China [7] revealed a prevalence favoring secondary infertility.

Studies in African countries also reported different patterns of infertility. The prevalence of primary infertility was dominant in studies from Ethiopia (14.4%) [8], Sudan (68.9%) [9], and Kenya (55.6%) [10]. Other studies such as those in Nigeria [11] and Egypt [12] reported a predominance of secondary infertility.

Even within Tanzania, different studies have reported varying patterns of infertility. A study in Dar es Salaam reported a prevalence of primary infertility [13], whereas a study in Moshi found that secondary infertility was more common [14]. It has been more than 10 years since the study in Moshi revealed that secondary infertility was more common than primary infertility, and it is unclear whether this pattern has persisted. Additionally, the study in Dar es Salaam focused on female partners, providing little information about male partners. Therefore, it is necessary to determine the current pattern of infertility in Dodoma, Tanzania.

Previous studies in China [15,16], Ethiopia [8], Dar es Salaam, Tanzania [13], and Dodoma, Tanzania [17], have reported on the sociodemographic factors for infertility. The observed female risk factors included increasing age [13,15], early age at marriage, lower education level [7,15], residence, and occupation [17]. The male risk factor included the working environment [16]. Differences in the sociodemographic profiles of patients with infertility may account for the risk of infertility.

Information on the pattern of infertility will increase our understanding of the burden of the disease in Tanzania, provide justification for improving fertility care in public hospitals, and enhance our understanding of the sociodemographic characteristics that are protective or harmful to fertility. This, in turn, will help improve the reproductive health of the population.

This study determined the pattern of infertility and the sociodemographic characteristics and among participants with infertility who attended a tertiary hospital in Tanzania.

2. Materials and Methods

2.1. Data Collection

The study design was a hospital-based analytical cross-sectional study, conducted at Benjamin Mkapa Hospital in Dodoma region, Tanzania. It is a specialized hospital that serves as a referral center for regions of the central zone. The hospital serves approximately 600–700 patients with different cases per day as outpatients. The bed capacity is about 400. The hospital is well-equipped with diagnostic tools for infertility and runs an assisted reproduction clinic within the Department of Gynecology and Obstetrics.

The study population was 422 randomly selected patients with infertility from different parts of Tanzania enrolled from February to March 2023.

The inclusion criteria were as follows: (i) both women and men within the reproductive age group 20–49 years; (ii) inability to conceive/affect pregnancy after 12 months of regular unprotected sexual intercourse. The exclusion criterion was those who refused to consent and had tried to conceive for less than 12 months and less than 6 months for women aged above 35 years.

This study employed three investigators and three research assistants who helped with data collection. There were three days of training to guide the research assistants with the study. The ethical clearance (Ref. No. MA84/261/02/14) was obtained from the University of Dodoma Institutional Research Review Committee and the permission to conduct the study was approved by the Executive Director of Benjamin Mkapa Hospital, who assigned the Directorate of Training and Research to provide a permission letter to the investigators to conduct the study. The investigator supervised the activity throughout the study to ensure accurate data collection.

Data collection was facilitated using a pretested structured infertility evaluation clinical form. This form was modified to capture information on sociodemographic characteris-

tics, type of infertility and measuring weight and height. Interviews with patients were conducted using an electronic data kit (ODK) with its aggregate platform called Kobo Toolbox v2021.2.4, which enabled efficient data collection and management during the study. Measurement of weight and height followed standard procedures according to the WHO stepwise approach [18].

Participants provided their informed consent in writing prior to interviews. The dependent variable was infertility and the independent variables were sociodemographic characteristics (age, sex, high level of education, occupation, place of residence, marital status, and BMI). The pattern of infertility was categorized as primary infertility and secondary infertility according to their parity.

2.2. Sample Size Determination

The sample size of 384 participants was calculated from the formula:

$$N = \frac{(Z)^2 \times p(1-p)}{d^2}$$

where

N—Sample size required.

Z—The desired significance level. It was 1.96 for 95% confidence interval.

p—The proportion. We used 50% because previous studies on patterns and sociodemographic characteristics in the Dodoma region were limited.

d—The size of the mean difference. It was 0.05.

$$N = \frac{(1.96)^2 \times 0.5(1-0.5)}{0.5^2} = 384 \text{ participants.}$$

Including a 10% dropout rate, the total number of participants was 422.

2.3. Data Analysis

The researchers analyzed the data using SPSS version 25. The analysis included descriptive and inferential statistics. Descriptive statistics described the sample population and relevant proportions in frequency tables, while inferential statistics were used for cross-tabulations between independent and dependent variables. Logistic regression determined the association between the type of infertility and sociodemographic factors. A *p*-value of <0.05 was considered statistically significant.

3. Results

3.1. Sociodemographic Characteristics of the Participants

Three hundred and eighty-five (385) males and females with infertility were enrolled with a response rate of 92%. Overall, the majority of the participants had an average age of 34.69 ± 5.89 years, were married (285, 74.03%), with a duration of more than ten years in cohabiting or marriage (320, 83.12%), had attained college or university education (253, 65.71%), came from the Central Zone of Tanzania (275, 71.43%), lived in urban areas (307, 79.74%), worked in teaching (53, 13.77%), and were overweight (178, 46.23%), as shown in Table 1.

Table 1. Sociodemographic characteristics of participants with infertility at Benjamin Mkapa Hospital, Dodoma, Tanzania (N = 385).

Variables	Categories	Frequency Total Number of Patients (N = 385)	Sex	
			Female (N = 201)	Male (N = 184)
Age * (years)		34.69 ± 5.89	33.59 ± 6.02	35.88 ± 5.51
Age (years)	20–25	18 (4.68%)	15 (7.46%)	3 (1.63%)
	26–31	106 (27.53%)	67 (33.33%)	39 (21.2%)
	32–37	141 (36.62%)	63 (31.34%)	78 (42.39%)
	38–43	89 (23.12%)	43 (21.39%)	46 (25%)
	44–49	31 (8.05%)	13 (6.47%)	18 (9.78%)
Marital status	Cohabiting	100 (25.97%)	48 (23.88%)	52 (28.26%)
	Married	285 (74.03%)	153 (76.12%)	132 (71.74%)
Level of education	No formal education	1 (0.26%)	1 (0.50%)	0 (0.00%)
	Primary	41 (10.65%)	26 (12.94%)	15 (8.15%)
	Secondary	90 (23.38%)	52 (25.87%)	38 (20.65%)
	College/University	253 (65.71%)	122 (60.70%)	131 (71.20%)
BMI status	Underweight (<18.5)	8 (2.08%)	6 (2.99%)	2 (1.09%)
	Normal (18.5−24.9)	138 (35.84%)	74 (36.82%)	64 (34.78%)
	Overweight (25.0−29.9)	178 (46.23%)	87 (43.28%)	91 (49.46%)
	Obese (≥30.0)	61 (15.84%)	34 (16.92%)	27 (14.67%)
Place of residence	Rural	78 (20.26%)	45 (22.39%)	2 (1.09%)
	Urban	307 (79.74%)	156 (77.61%)	151 (82.07%)
Zones	Lake	15 (3.90%)	9 (4.48%)	9 (4.89%)
	Central	275 (71.43)	150 (74.63%)	139 (75.54%)
	Coastal	39 (10.13%)	11 (5.47%)	11 (5.98%)
	Northern	25 (6.49%)	12 (5.97%)	10 (5.43%)
	Southern	23 (5.97%)	16 (7.96%)	14 (7.61%)
	Western	5 (1.30%)	1 (0.50%)	0 (0.00%)
	Zanzibar	3 (0.78%)	2 (1.00%)	1 (1.00%)
Occupation	Military	43 (11.17%)	12 (5.97%)	29 (15.76%)
	Finance	15 (3.90%)	3 (1.49%)	9 (4.89%)
	Healthcare	32 (8.31%)	21 (10.45%)	10 (5.43%)
	Teaching	53 (13.77%)	31 (15.42%)	27 (14.67%)
	Others	242 (62.86%)	134 (66.67%)	155 (84.24%)
Duration of marriage/cohabiting(years)	<10	65 (16.88%)	36 (17.91%)	29 (15.76%)
	≥10	320 (83.12%)	165 (82.09%)	155 (84.24%)

* Mean + SD.

3.2. Pattern of Infertility Among Participants with Infertility

The majority of participants experienced secondary infertility (59.00%, 228), as shown in Figure 1.

3.3. Association Between Sociodemographic Factors and Infertility

This study shows the relationship between risk factors and infertility among male and female patients who attended the Assisted Reproductive Clinic at Benjamin Mkapa Hospital (N = 385). Factors that are statistically significant include age (p = 0.002) and duration of marriage/cohabiting (p < 0.001) as shown in Table 2.
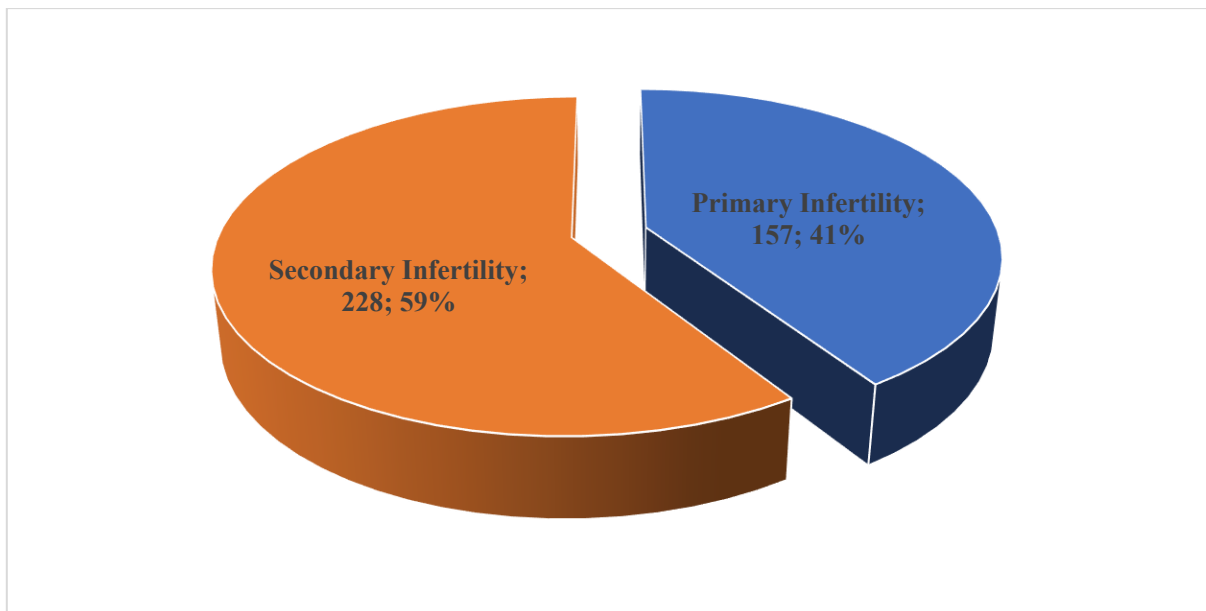
Figure 1. Pattern of infertility in participants with infertility attending Benjamin Mkapa Hospital, Dodoma, Tanzania (N = 385).

Table 2. Relationship between risk factors and infertility among participants attending Benjamin Mkapa Hospital (N = 385).

Variable	Categories	Infertility Status Primary Infertility	Secondary Infertility	Chi2	*p* Value
Age (years)	20–25	12 (66.67%)	6 (33.33%)	16.53	0.002 *
	26–31	51 (48.11%)	55 (51.89%)		
	32–37	61 (43.26%)	80 (56.74%)		
	38–43	25 (28.09%)	64 (71.91%)		
	44–49	8 (25.81%)	23 (74.19%)		
Sex				2.092	0.148
	Female	75 (37.31%)	126 (62.69%)		
	Male	82 (44.57%)	102 (55.43%)		
Marital status				0.432	0.511
	Cohabiting	38 (38%)	62 (62%)		
	Married	119 (41.75%)	166 (58.25%)		
Place of residence				0.320	0.572
	Rural	34 (43.59%)	44 (56.41%)		
	Urban	123 (40.07%)	184 (59.93%)		
Occupation				14.516	0123
	Military	20 (48.78%)	21 (51.22%)		
	Finance	8 (66.67%)	4 (33.33%)		
	Healthcare	4 (12.90%)	27 (87.10%)		
	Teaching	23 (39.66%)	35 (60.34%)		
	Other	102 (41.98%)	141 (58.02%)		
Zones				12.891	0.452
	Lake	4 (22.22%)	14 (77.78%)		
	Central	135 (46.71%)	154 (53.29%)		
	Coastal	5 (22.73%)	17 (77.27%)		
	Northern	5 (22.73%)	14 (63.64%)		
	Southern	5 (16.67%)	25 (83.33%)		
	Western	0 (0.00%)	1 (100%)		
	Zanzibar	0 (0.00%)	2 (100.00%)		

Table 2. *Cont.*

Variable	Categories	Infertility Status		Chi2	*p* Value
Level of education				1.825	0.610
	No formal education	1 (100.00%)	0 (0.00%)		
	Primary education	16 (39.02%)	25 (60.98%)		
	Secondary education	39 (43.33%)	51 (56.67%)		
	College/University	101 (39.92%)	152 (60.08%)		
Duration of marriage/cohabiting (years)				18.430	<0.001 *
	>10	11 (16.92%)	54 (83.08%)		
	≤10	146 (45.63%)	174 (54.37%)		
BMI status				0.696	0.874
	Underweight	4 (50.00%)	4 (50.00%)		
	Normal	55 (39.86%)	83 (60.14%)		
	Overweight	71 (39.89%)	107 (60.11%)		
	Obese	27 (44.26%)	34 (55.74%)		

* statistically significant.

The results of the multivariate logistic regression analysis indicated that participants aged 38–43 years (AOR = 5.068, 95% CI 1.573–16.33) were more likely to have secondary infertility compared to those aged 20–25 years, and this association was statistically significant. Participants with a marriage or cohabiting duration of less than 10 years were less likely to have secondary infertility compared to those whose duration of marriage or cohabiting was greater than or equal to 10 years (AOR = 0.406, 95% CI 0.189, 0.873), and this association was statistically significant as shown in Table 3.

Table 3. Multivariate logistic analysis of sociodemographic factors associated with secondary infertility among infertility participants attending Benjamin Mkapa Hospital, Dodoma, Tanzania (N = 385).

Variable	Categories	COR at 95%	*p* Value	AOR at 95%	*p* Value
Age (years)	20–25	Ref.			
	26–31	2.157 (0.754, 6.172)	0.152	2.445 (0.823, 7.266)	0.108
	32–37	2.623 (0.932, 7.384)	0.068	2.887 (0.982, 8.491)	0.054
	38–43	5.12 (1.733, 15.13)	0.003	5.068 (1.573, 16.33)	**0.007 ***
	44–49	5.75 (1.618, 20.432)	0.007	3.844 (0.986, 14.987)	0.052
Duration of cohabiting/marriage (years)	<10	Ref.			
	≥10	5.75 (1.618, 20.432)	<0.001	0.406 (0.189, 0.873)	**0.021 ***

* Statistically significant.

4. Discussion

This study found that among participants with infertility who attended the Assisted Reproduction Clinic at Benjamin Mkapa Hospital, the dominant pattern of infertility was secondary infertility. This finding was similar to the report from the study conducted in Moshi, Tanzania, but differed from the findings of the study conducted in Dar es Salaam, Tanzania.

The difference in the pattern of infertility between different regions in Tanzania could be explained by variations in sexual behavior and the rate of teenage pregnancy [19,20]. Women in Moshi (2.7%) and Dodoma (3.2%) reported fewer lifetime sexual partners and lower condom usage compared to those in Dar es Salaam (8.6%) [19]. Condom use is linked to preventing pregnancy [21].

Teenage pregnancy in Dar es Salaam (18.2%) is lower than in Dodoma (21.2%) [20]. Teenagers who have ever been pregnant may experience either live birth or pregnancy loss, which can include stillbirth, miscarriage, and induced abortion. A previous study [22] has reported that contributing factors to secondary infertility could include first pregnancy before the age of 21, a history of unwanted pregnancy, stillbirth, and postpartum infection.

Secondary infertility accounted for more than half of the participants in this study. These results may indicate a high burden of the condition in Dodoma, Tanzania, as observed in other cities in African countries such as Egypt [12] and Nigeria [11]. This finding contrasts with those from Ethiopia [8], Sudan [9], and Kenya [10], where primary infertility was dominant. These differences could be explained in terms of variations in geographical location and cultural differences.

In addition, this study's findings are similar to those of a study conducted in China [7] but contrary to findings in Iran [6]. Possible causes of secondary infertility in Dodoma could be related to advanced age.

Both male and female participants experienced secondary infertility in this study. A previous study indicated that individuals with secondary infertility often exhibit lower levels of infertility-related stress [23]. This suggests that participants may be less likely to discontinue fertility treatment prematurely. Furthermore, participants with secondary infertility have a better outcome of intrauterine insemination (IUI) as seen in the study [24], which gives hope for better results with medically assisted reproduction and therefore can improve the quality of life of patients.

This study found that one of the relevant sociodemographic factors of infertility among participants who attended the Assisted Reproduction clinic at Benjamin Mkapa Hospital was age.

The findings of this study are similar to those of studies conducted in Dar es Salaam [13], Egypt [12], and China [15], where participants exhibited advanced age. The increased risk of infertility in older females may be attributed to poor egg quality, as reported in another study [25]. Similarly, another study [26] found an association between a decline in semen parameters and male age. Public awareness on the effect of age on fertility is required in Tanzania.

This study also found that the risk of infertility among participants was greater after ten years of cohabitation or marriage. More than ten years of cohabitation or marriage are associated with poor sexual function, fertility-related psychological stress, and marital conflict [27,28].

The study [29] found that a prolonged duration of cohabitation or marriage may be favored by having a child. It is surprising that in this study, many of the participants, despite experiencing infertility, were still living together and seeking treatment. This study also contrasts with the findings of a study [30] where a longer duration of cohabitation or marriage was associated with a reduced likelihood of seeking infertility treatment.

The habit of the participant of seeking treatment could be explained by the possible relationship between infertility and other medical conditions. Infertility may indicate underlying medical conditions such as cardiovascular disease, cancer, and other chronic conditions [31]. Patients with infertility, when seeking infertility treatment, may explain their desire for fertility to health professionals, who can then refer them to a fertility clinic.

Although other studies found associations with lower educational level [17], rural residence, and higher body mass index [32], this study did not find such associations. This could be due to the nature of the participants, as the majority were residing in urban areas with tertiary educational levels.

The limitation of this study is that the results may only be applicable to the Dodoma region in Tanzania and may not reflect the entire country. This is because a large number of participants were from the central region, and there may be different patterns in other regions. Therefore, a population-based study is recommended for future research.

5. Conclusions

The phenomenon of infertility is on the rise in Tanzania. Preventive measures can help reduce its incidence. Integrating reproductive health education on appropriate fertility age into the health package may contribute to alleviating this rise. Additionally, enhancing fertility care in public hospitals can improve accessibility to treatment services and facilitate early management of cases.

References

1. Zegers-Hochschild, F.; Adamson, G.D.; Dyer, S.; Racowsky, C.; De Mouzon, J.; Sokol, R.; Rienzi, L.; Sunde, A.; Schmidt, L.; Cooke, I.D.; et al. The International Glossary on Infertility and Fertility Care. *Fertil. Steril.* **2017**, *108*, 393–406. [CrossRef]
2. Suleiman, M.; August, F.; Nanyaro, M.W.; Wangwe, P.; Kikula, A.; Balandya, B.; Ngarina, M.; Muganyizi, P. Quality of life and associated factors among infertile women attending infertility clinic at Mnazi Mmoja Hospital, Zanzibar. *BMC Womens Health* **2023**, *23*, 400. [CrossRef]
3. Favot, I.; Ngalula, J.; Mgalla, Z.; Klokke, A.H.; Gumodoka, B.; Boerma, J.T. HIV infection and sexual behaviour among women with infertility in Tanzania: A hospital-based study. *Int. J. Epidemiol.* **1997**, *26*, 414–419. [CrossRef] [PubMed]
4. Bakhtiyar, K.; Beiranvand, R.; Ardalan, A. An investigation of the effects of infertility on Women's quality of life: A case-control study. *BMC Womens Health* **2019**, *19*, 114. [CrossRef]
5. Abebe, M.S.; Afework, M.; Abaynew, Y. Primary and secondary infertility in Africa: Systematic review with meta-analysis. *Fertil. Res. Pract.* **2020**, *6*, 20. [CrossRef]
6. Masoumi, S.Z.; Parsa, P.; Darvish, N.; Mokhtari, S.; Yavangi, M.; Roshanaei, G. An epidemiologic survey on the causes of infertility in patients referred to infertility center in Fatemieh Hospital in Hamadan. *Iran. J. Reprod. Med.* **2015**, *13*, 513–516.
7. Liang, S.; Chen, Y.; Wang, Q.; Chen, H.; Cui, C.; Xu, X.; Zhang, Q.; Zhang, C. Prevalence and associated factors of infertility among 20–49 year old women in Henan Province, China. *Reprod. Health* **2021**, *18*, 254. [CrossRef]
8. Akalewold, M.; Yohannes, G.W.; Abdo, Z.A.; Hailu, Y.; Negesse, A. Magnitude of infertility and associated factors among women attending selected public hospitals in Addis Ababa, Ethiopia: A cross-sectional study. *BMC Womens Health* **2022**, *22*, 11. [CrossRef] [PubMed]
9. Elhussein, O.G.; Ahmed, M.A.; Suliman, S.O.; Yahya, L.I.; Adam, I. Epidemiology of infertility and characteristics of infertile couples requesting assisted reproduction in a low-resource setting in Africa, Sudan. *Fertil. Res. Pract.* **2019**, *5*, 7. [CrossRef]
10. Charles, O.O. Causes and Types of Infertility Amongst Couples Managed at Kenyatta National Hospital. Master's Thesis, University of Nairobi, Nairobi, Kenya, 2013.
11. Odunvbun, W.; Oziga, D.; Oyeye, L.; Ojeogwu, C. Pattern of infertility among infertile couple in a secondary health facility in Delta State, South South Nigeria. *Trop. J. Obstet. Gynaecol.* **2018**, *35*, 244. [CrossRef]
12. Mohsen, G.; El-Awady, M.; Abdelazeem, O. Prevalence of infertility in rural areas of Kafr El-Sheikh-Egypt: A community-based study. *J. Egypt. Public Health Assoc.* **2001**, *76*, 469–486.
13. Kasililika, A.G.; Odukogbe, A.-T.A.; Dairo, M.D.; Balandya, B.S.; Bunuma, E.K. Lifestyle and oxidative stress status in infertile women in Dar es Salaam, Tanzania: Comparative cross-sectional study. *Middle East Fertil. Soc. J.* **2021**, *26*, 33. [CrossRef]
14. Larsen, U.; Masenga, G.; Mlay, J. Infertility in a community and clinic based sample of couples in Moshi, Northern Tanzania. *East Afr. Med. J.* **2006**, *83*, 10–17. [CrossRef]
15. Zhou, Z.; Zheng, D.; Wu, H.; Li, R.; Xu, S.; Kang, Y.; Cao, Y.; Chen, X.; Zhu, Y.; Xu, S.; et al. Epidemiology of infertility in China: A population-based study. *BJOG. Int. J. Obstet. Gynaecol.* **2018**, *125*, 432–441. [CrossRef]
16. Cong, J.; Li, P.; Zheng, L.; Tan, J. Prevalence and Risk Factors of Infertility at a Rural Site of Northern China. *PLoS ONE* **2016**, *11*, e0155563. [CrossRef]

17. Emily, A.G.; Cyrialis, M.; Dickson, C.; Ester, S.; Mkhoi, L.M.; Susan, M.M.; Shalini, K.; Charles, R.M. Risk factors for infertility and barriers to treatment in Tanzania: A survey and medical records study. *Afr. Health Sci.* **2023**, *23*, 462–471. [CrossRef]

18. World Health Organization. *The WHO STEPwise Approach to Noncommunicable Disease Risk Factor Surveillance (STEPS)*; World Health Organization: Geneva, Switzerland, 2017.

19. Ministry of Health (MoH) [Tanzania Mainland]; Ministry of Health (MoH) [Zanzibar]; National Bureau of Statistics (NBS); Office of the Chief Government Statistician (OCGS); ICF. Knowledge, attitudes, and behaviour related to HIV and AIDS. In *Tanzania Demographic and Health Survey and Malaria Indicator Survey 2022 Final Report*; MoH: Dodoma, Tanzania; NBS, OCGS, and ICF: Rockville, MD, USA, 2022; p. 449.

20. Ministry of Health (MoH) [Tanzania Mainland]; Ministry of Health (MoH) [Zanzibar]; National Bureau of Statistics (NBS); Office of the Chief Government Statistician (OCGS); ICF. Fertility. In *Tanzania Demographic and Health Survey and Malaria Indicator Survey 2022 Final Report*; MoH: Dodoma, Tanzania; NBS, OCGS, and ICF: Rockville, MD, USA, 2022; pp. 155–157.

21. World Health Organization Department of Sexual and Reproductive Health and Research (WHO/SRH); Johns Hopkins Bloomberg School of Public Health/Center for Communication Programs (CCP); Knowledge SUCCESS. Male condoms. In *Family Planning: A Global Handbook for Providers (2022 Update)*; CCP: Baltimore, MD, USA; WHO: Geneva, Switzerland, 2022; pp. 257–270.

22. Dhont, N.; Luchters, S.; Muvunyi, C.; Vyankandondera, J.; De Naeyer, L.; Temmerman, M.; Van De Wijgert, J. The risk factor profile of women with secondary infertility: An unmatched case-control study in Kigali, Rwanda. *BMC Womens Health* **2011**, *11*, 32. [CrossRef]

23. Zaidouni, A.; Fatima, O.; Amal, B.; Siham, A.; Houyam, H.; Jalal, K.; Rachid, B. Predictors of infertility stress among couples diagnosed in a public center for assisted reproductive technology. *J. Hum. Reprod. Sci.* **2018**, *11*, 376. [CrossRef]

24. He, W.; Chen, S.; Huang, J.; Zhang, X.; Hu, L.; Xue, Z.; Qiu, Y. Association Between Type of Infertility and Live Birth in Couples With a Single Intrauterine Insemination Resulting in Pregnancy: A Propensity Score Matching Cohort Study. *Front. Endocrinol.* **2022**, *13*, 926183. [CrossRef]

25. Barragán, M.; Pons, J.; Ferrer-Vaquer, A.; Cornet-Bartolomé, D.; Schweitzer, A.; Hubbard, J.; Auer, H.; Rodolosse, A.; Vassena, R. The transcriptome of human oocytes is related to age and ovarian reserve. *MHR Basic Sci. Reprod. Med.* **2017**, *23*, 535–548. [CrossRef]

26. Johnson, S.L.; Dunleavy, J.; Gemmell, N.J.; Nakagawa, S. Consistent age-dependent declines in human semen quality: A systematic review and meta-analysis. *Ageing Res. Rev.* **2015**, *19*, 22–33. [CrossRef]

27. Kiani, Z.; Simbar, M.; Hajian, S.; Zayeri, F.; RashidiFakari, F.; Chimeh, F.J. Investigating different dimensions of infertile women's quality of life: A descriptive cross-sectional study. *BMC Public Health* **2022**, *22*, 2436. [CrossRef]

28. Shayesteh-Parto, F.; Hasanpoor-Azghady, S.B.; Arefi, S.; Amiri-Farahani, L. Infertility-related stress and its relationship with emotional divorce among Iranian infertile people. *BMC Psychiatry* **2023**, *23*, 666. [CrossRef]

29. Kjaer, T.; Albieri, V.; Jensen, A.; Kjaer, S.K.; Johansen, C.; Dalton, S.O. Divorce or end of cohabitation among Danish women evaluated for fertility problems. *Acta Obstet. Gynecol. Scand.* **2014**, *93*, 269–276. [CrossRef]

30. Baranwal, A.; Chattopadhyay, A. Proposition of Belief and Practice Theory for Men Undergoing Infertility Treatment: A Hospital Based Study in Mumbai, India. *Front. Sociol.* **2020**, *5*, 43. [CrossRef]

31. Choy, J.T.; Eisenberg, M.L. Male infertility as a window to health. *Fertil. Steril.* **2018**, *110*, 810–814. [CrossRef]

32. Legese, N.; Tura, A.K.; Roba, K.T.; Demeke, H. The prevalence of infertility and factors associated with infertility in Ethiopia: Analysis of Ethiopian Demographic and Health Survey (EDHS). *PLoS ONE* **2023**, *18*, e0291912. [CrossRef]