Supplementary material

Supplementary Table 1. General characteristics of research group.

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| General characteristics | Total(N = 81) | SD(N = 42) | Non-SD(N = 39) | *p* value |
| N (%), Mean ± SD |
| Age | 43.2 ± 3.8 | 43.7 ± 4.3 | 42.6 ± 3.1 | 0.164 |
|  | 40–44 years old | 56 (69.1) | 26 (46.4) | 30 (53.6) | 0.144 |
| ≥45–60 years old | 25 (30.9) | 16 (64.0) | 9 (36.0) |
| Infertility type |
|  | Primary | 37 (45.7) | 20 (54.1) | 17 (45.9) | 0.716 |
| Secondary | 44 (54.3) | 22 (50.0) | 22 (50.0) |
| Infertile duration  | 80.6 ± 53.5 | 79.7 ± 47.2 | 81.6 ± 60.0 | 0.872 |
|  | <36 mon | 14 (17.3) | 4 (28.6) | 10 (71.4) | 0.055 |
| ≥36 mon | 67 (82.7) | 38 (56.7) | 29 (43.3) |
| Occupation |
|  | Office work | 47 (58.0) | 22 (46.8) | 25 (53.2) | 0.218 |
| Manual work | 26 (32.1) | 17 (65.4) | 9 (34.6) |
| Driver | 8 (9.9) | 3 (37.5) | 5 (62.5) |
| Geography |
|  | Rural | 39 (48.1) | 25 (64.1) | 14 (35.9) | 0.033 |
| Urban | 42 (51.9) | 17 (40.5) | 25 (59.5) |
| Economy (self-reported) |
|  | Low income | 16 (19.8) | 10 (62.5) | 6 (37.5) | 0.093 |
| Medium income | 41 (50.6) | 24 (58.5) | 17 (41.5) |
| High income | 24 (29.6) | 8 (33.3) | 16 (66.7) |
| Economy (couple-reported) |
|  | Low income | 25 (30.9) | 16 (64.0) | 9 (36.0) | 0.054 |
| Medium income | 43 (53.1) | 23 (53.5) | 20 (46.5) |
| High income | 13 (16.0) | 3 (23.1) | 10 (76.9) |
| Weight | 66.9 ± 8.3 | 63.1 ± 8.7 | 66.9 ± 7.8 | 0.340 |
| Height | 166.5 ± 5.2 | 165.7 ± 5.4 | 167.3 ± 4.9 | 0.188 |
| BMI  | 23.7 ± 2.4 | 23.6 ± 2.6 | 23.9 ± 2.3 | 0.693 |
|  | <18.5 kg/m2  | 1 (1.2) | 1 (100.0) | 0 (0.0) | 0.579 |
| 18.5–24.9 kg/m2 | 57 (70.4) | 30 (52.6) | 27 (47.4) |
| ≥25.0 kg/m2 | 23 (28.4) | 11 (47.8) | 12 (52.2) |
| Waist circumference | 85.3 ± 9.6 | 84.2 ± 10.1 | 86.6 ± 9.0 | 0.263 |
|  | <90 cm | 55 (67.9) | 29 (52.7) | 26 (47.3) | 0.819 |
| ≥90 cm | 26 (32.1) | 13 (50.0) | 13 (50.0) |
| Hips circumference (cm) | 95.9 ± 5.1 | 95.7 ± 5.0 | 96.2 ± 5.2 | 0.684 |
| WHR | 0.89 ± 0.08 | 0.88 ± 0.08 | 0.90 ± 0.07 | 0.214 |
| WHtR | 0.51 ± 0.06 | 0.51 ± 0.06 | 0.52 ± 0.05 | 0.475 |
| Smoking |
|  | Yes | 34 (42.0) | 16 (47.1) | 18 (52.9) | 0.463 |
| No | 47 (58.0) | 26 (55.3) | 21 (44.7) |
| Alcohol |
|  | Yes | 65 (80.2) | 31 (47.7) | 34 (52.3) | 0.131 |
| No | 16 (19.8) | 11 (68.8) | 5 (31.2) |

BMI: Body Mass Index. WHR: waist-to-hips ratios. WHtR: waist-to-height ratios. SD: sexual dysfunction.

Economy (self-reported): Low income: <5 millions VND/month; Medium income: 5–10 millions VND/month; High income: >10 millions VND/month.

Economy (couple-reported): Low income: <10 millions VND/month; Medium income: 10–20 millions VND/month; High income: >20 millions VND/month.

Supplementary Table 2. Characteristics of sexual dysfunction in infertile men aged 40–60 years.

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| --- | --- | --- | --- | --- | --- |
| SD items | Total(N = 81) | Medium/Severe-SD (N = 5) | Mild-SD(N = 37) | Non-SD(N = 39) | *p* value |
| Mean ± SD |  |
| Erectile Function (Q1–5, Q15) | 24.1 ± 6.6  | 4.6 ± 2.5 | 22.2 ± 4.1 | 28.5 ± 1.4 | <0.001 |
| Orgasmic Function (Q9, 10) | 7.8 ± 2.3 | 2.0 ± 2.1 | 6.9 ± 1.3  | 9.3 ± 1.0 | <0.001 |
| Sexual Desire (Q11, 12) | 8.1 ± 2.1 | 2.2 ± 1.5 | 7.4 ± 1.2 | 9.5 ± 0.7 | <0.001 |
| Intercourse Satisfaction (Q6–8) | 9.7 ± 2.8 | 2.2 ± 1.9 | 8.9 ± 1.4 | 11.4 ± 1.7 | <0.001 |
| Overall Satisfaction (Q13, 14) | 7.2 ± 1.7 | 3.8 ± 1.8 | 6.5 ± 1.1 | 8.3 ± 1.3 | <0.001 |
| Total IIEF scores | 56.9 ± 14.2 | 14.8 ± 6.2 | 51.9 ± 6.6 | 67.0 ± 3.9 | <0.001 |

SD: sexual dysfunction. IIEF: International Index of Erectile Function.

Supplementary Table 3. Effect of diseases on male sexual disorder in infertile men.

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| --- | --- | --- | --- | --- | --- |
| Diseases | Total(N = 81) | Medium/Severe-SD(N = 5) | Mild-SD(N = 37)  | Non-SD (N = 39) | *p* value |
| N (%), Mean ± SD |
| Diabetes |
|  | Yes | 10 (12.3) | 1 (10.0) | 5 (50.0) | 4 (40.0) | 0.789 |
| No | 71 (87.7) | 4 (4.6) | 32 (45.1) | 35 (49.3) |
| Hypertension |
|  | Yes | 15 (18.5) | 1 (6.7) | 6 (40.0) | 8 (53.3) | 0.887 |
| No | 66 (81.5) | 4 (6.1) | 31 (47.0) | 31 (47.0) |
| CVD |
|  | Yes | 11 (13.6) | 2 (18.2) | 7 (63.6) | 2 (18.2) | 0.044 |
| No | 70 (86.4) | 3 (4.3) | 30 (42.9) | 37 (52.9) |
| Hyperuricemia |
|  | Yes | 27 (33.3) | 2 (7.4) | 13 (48.1) | 12 (44.4) | 0.874 |
| No | 54 (66.7) | 3 (5.6) | 24 (44.4) | 27 (50.0) |
| Acid uric blood level | 407 ± 85.8 | 382.9 ± 73.4 | 402.3 ± 79.8 | 416.7 ± 94.5 | 0.667 |
| Metabolic syndrome |
|  | Yes | 19 (23.5) | 2 (10.5) | 8 (42.1) | 9 (47.4) | 0.659 |
| No | 62 (76.5) | 3 (4.8) | 29 (46.8) | 30 (48.4) |
| Glucose fasting level | 6.1 ± 1.8 | 7.6 ± 4.7 | 6.0 ± 1.9 | 5.9 ± 1.0 | 0.154 |
| Bilan lipid |
|  | Total cholesterol | 5.4 ± 1.0 | 4.9 ± 1.9 | 5.7 ± 1.0 | 5.3 ± 0.8 | 0.116 |
| Triglycerid | 3.3 ± 2.8 | 2.9 ± 3.1 | 3.4 ± 1.9 | 3.4 ± 3.6 | 0.947 |
| LDL-Cholesterol | 2.9 ± 1.1 | 3.1 ± 1.2 | 3.1 ± 1.2 | 2.8 ± 0.9 | 0.491 |
| HDL-Cholesterol | 1.6 ± 0.8 | 2.0 ± 1.3 | 1.5 ± 0.8 | 1.6 ± 0.8 | 0.546 |
| Varicocelle |
|  | Yes | 22 (27.2) | 0 (0.0) | 10 (45.5) | 12 (54.5) | 0.346 |
| No | 59 (72.8) | 5 (8.5) | 27 (45.8) | 27 (45.8) |

SD: sexual dysfunction. CVD: Cardiovascular disease. LDL: Low density lipoprotein. HDL: High density lipoprotein.

Supplementary Table 4. The correlation between result of semen analysis and sexual dysfunction index.

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| --- | --- | --- | --- | --- | --- | --- |
| Reproductive quality | Erectile Function | Orgasmic Function | Sexual Desire | Intercourse Satisfaction | Overall Satisfaction | Total IIEF scores |
| Rho (*p*) |
| Testosterone blood level (N = 80) | −0.051 (0.651) | 0.088 (0.438) | −0.026 (0.818) | −0.005 (0.968) | −0.099 (0.384) | −0.036 (0.754) |
| Semen Analysis (N = 81) |
|  | Semen volume | −0.060 (0.592) | 0.004 (0.973) | −0.017 (0.877) | −0.031 (0.781) | 0.007 (0.953) | −0.040 (0.724) |
| pH | −0.046 (0.683) | −0.051 (0.650) | 0.025 (0.825) | −0.049 (0.663) | −0.083 (0.464) | −0.063 (0.578) |
| Sperm concerntration | −0.085 (0.450) | −0.126 (0.263) | −0.114 (0.309) | −0.082 (0.465 | −0.028 (0.801) | −0.110 (0.328) |
| Progressive motility | 0.035 (0.756) | −0.016 (0.886) | 0.023 (0.841) | 0.037 (0.742) | 0.028 (0.806) | 0.019 (0.866) |
| Vitality | 0.182 (0.105) | 0.181 (0.107) | 0.259 (0.020) | 0.368 (0.001) | 0.266 (0.016) | 0.269 (0.015) |
| Normal morphology | −0.136 (0.227) | −0.183 (0.103) | −0.164 (0.143) | −0.072 (0.525) | −0.033 (0.767) | −0.150 (0.182) |
| DFI (N = 61) | −0.233 (0.071) | −0.285 (0.026) | −0.240 (0.062) | −0.277 (0.031) | −0.347 (0.006) | 0.110 (0.399) |

DFI:DNA Fragmentation Index. Rho: Spearman’s correlation coefficient. IIEF: International Index of Erectile Function.

Supplementary Table 5. The correlation between demography-sociology factors and sexual dysfunction index.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Demography-sociology factors (N = 81) | Erectile Function | Orgasmic Function | Sexual Desire | Intercourse Satisfaction | Overall Satisfaction | Total IIEF scores |
| Rho (*p*) |
| Age | −0.086 (0.444) | −0.224 (0.044) | −0.285 (0.010) | −0.208 (0.063) | −0.310 (0.005) | −0.214 (0.055) |
| Infertility duration  | −0.081 (0.474) | 0.067 (0.550) | −0.005 (0.964) | 0.064 (0.569) | −0.078 (0.489) | −0.042 (0.710) |
| Obstetric history |
|  | N0 of term births | 0.359 (0.001) | 0.165 (0.141) | 0.149 (0.186) | 0.265 (0.017) | 0.129 (0.249) | 0.274 (0.013) |
| N0 of preterm births | −0.026 (0.815) | −0.158 (0.158) | −0.044 (0.696) | 0.015 (0.898) | −0.107 (0.341) | −0.081 (0.470) |
| N0 of abortions | −0.021 (0.815) | 0.006 (0.959) | 0.010 (0.929) | −0.126 (0.264) | 0.010 (0.931) | −0.045 (0.691) |
| N0 of living children | 0.353 (0.001) | 0.130 (0.247) | 0.143 (0.202) | 0.260 (0.019) | 0.104 (0.355) | 0.256 (0.021) |
| Economy (self-reported) | 0.119 (0.288) | 0.250 (0.025) | 0.159 (0.155) | 0.099 (0.380) | 0.213 (0.056) | 0.191 (0.088) |
| Economy (couple-reported) | 0.149 (0.183) | 0.230 (0.039) | 0.121 (0.283) | 0.066 (0.558) | 0.188 (0.092) | 0.192 (0.087) |

Spearman correlation test. Rho: Spearman’s correlation coefficient. IIEF: International Index of Erectile Function.