EPIDEMIOLOGY OF MALE FACTOR INFERTILITY AMONG A SRI LANKAN POPULATION

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ABSTRACT

Introduction: Infertility, which defined as an inability to achieve a pregnancy following one year of unprotected sexual intercourse, affects 15% of all couples worldwide. A male factor contributes in part or whole to 50% of above couples. **Materials and Methods:** This was a descriptive study conducted among patients with male factor infertility at urology and andrology clinic, Teaching hospital, Peradeniya. Interview based questionnaire was performed with 156 patients to assess their demographic details. **Results**: Mean age of the study population was 34.30 years. Majority of patients belonged to the age group of 31-40 years and mainly consisted of patients engaging in blue collar jobs. Regarding the types of subfertility, 92.3% of our study population had primary subfertility whereas 7.7% had secondary subfertility. Factors such as smoking, alcohol consumption, infections such as mumps and TB and exposure to pesticides and high temperatures had a significant influence on male infertility. Positive family history for male factor subfertility was there in 2.4% of patients and 1.4% had a family history of androgen deficiency. **Conclusions**: New studies should be done over a large sample in different cultural and different geographical areas to get a more comprehensive understanding.

KEYWORDS: Male infertility, Epidemiology, Sri Lanka.

INTRODUCTION

Infertility is defined as an inability to achieve a pregnancy following one year of unprotected sexual intercourse.[1] It affects 15% of all couples worldwide, majority being residents of developing countries.[2,3] A male factor contributes in part or whole to 50% of above couples.[4,5,6] Male factor infertility is the failure of a couple to conceive owing to a male related factor and it can be caused by semen abnormalities (detected on semen analysis) or sexual dysfunction.[7] It affects one in 20 men[7] and is a devastating experience for both partners as they try to conceive. Often, infertile men perceive infertility as a threat to their masculinity and refuse consultations because of that. This limits the opportunities for patient education about the etiology, diagnosis, and treatment of male infertility. Helping them to distinguish between fertility and virility, which may ease their anxiety and also will help them in overcoming the problem.[7] The diagnosis of male factor infertility has a tremendous impact on the physical and emotional health and quality of life of affected couples.

According to World Health Organization (WHO), primary infertility is the term used when a woman has never conceived and secondary infertility is the incapability to conceive in a couple who have had at least one successful conception in the past.[8] Factors such as socio economic status, medical co-morbidities, infectious diseases, exposure to gonadotoxins and family history of subfertility can have a significant impact on both primary and secondary subfertility.

The scope of this study is to identify the magnitude the problem of male infertility as a public health burden in Sri Lanka, and to identify opportunities for future in improving the outcomes of male infertility care, including improvements in patient education, and health policy making and treatment.

MATERIALS AND METHODS
Methodology

This was a descriptive study conducted among patients with male factor infertility, at urology and andrology clinic, Teaching hospital, Peradeniya. Interview based questionnaire was performed with 156 patients to assess their demographic details.

Statistical analysis

Correlation was performed to discover whether there is a relationship between variables. Statistical significance at

p< 0.05 was accepted for all analysis. Data was analyzed using Statistical Package for the Social Sciences (SPSS) version 20.

RESULTS AND DISCUSSION
Mean age of the study population was 34.30 years. Majority of patients belonged to the age group of 31-40 years. Although there is enough evidence in literature revealing that man's fertility declines with increasing age,[9] the above observation in our study can be due to the trends of health seeking behavior in Sri Lankan community.

Table 1. The age distribution of the study population.

Age group	Frequency	Percentage
20-30	42	27.5%
31-40	95	62%
>40	16	10.5%

Considering the types of infertility, 92.3% of our study population had primary subfertility whereas 7.7% had secondary subfertility.

Table 2. Characteristics of the study sample.

| Characteristics		Percentage (%)
Ethnicity	Sinhala	91.7%
	Tamil	3.2%
	Muslim	5.1%
Occupation	White collar job	24.5%
	Blue collar job	75.5%
Gonadotoxins	Smoking	12.3%
	Alcohol consumption	13.5%
	Exposure to pesticides	7.8%
	Exposure to high temperature	4.8%
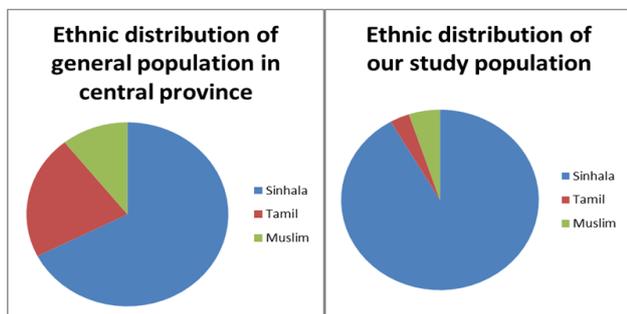
When considering the general population in the central province, 65% consisted of Sinhalese, 21% Tamils and 10.3% Muslims,[10] which is not ideally compatible with our study.

And majority of the study population consisted of patients engaged in blue collar jobs. The reduction in the percentages of Tamil and Muslim population and the patients doing white collar jobs in our study can be due to their preference in seeking healthcare services from the private sector.

A study done on the effects on diabetes on male fertility demonstrates that glucose metabolism is of great important for sperm cells, either type 1 diabetes or type 2 diabetes could have detrimental effects on male fertility.[11] The prevalence of diabetes mellitus among our study population was 1.4%, which may have had an impact on their subfertility. Numerous studies have been done to identify the association between smoking and male infertility. Most of them have reported a negative impact of smoking on semen analysis parameters and male infertility.[12] Further studies are needed in order to establish this relationship since our study population also consisted of 12.3% of patients who smoke.

Considering pesticides as a gonadotoxin there are several studies which show a decline in human semen quality and increased risks of male infertility.[13] This can be attributed to the 7.8% of patients in our study, who have engaged in jobs which had contacts with pesticides.
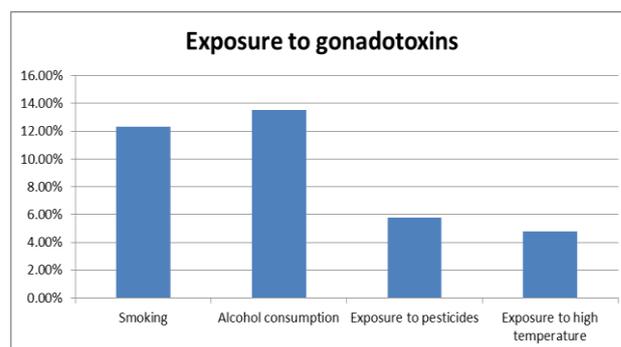
Orchitis is the most common complication following mumps infection which develops in 5-37% of all adult patients.[14] Apart from that it can lead to hyalinization of the seminiferous tubules which can cause fibrosis and atrophy of the testes.[15] A comprehensive review done in Ireland has shown that subfertility occurs in an estimated 13% of patients, and can occur with no signs of testicular atrophy.[16] Going parallel with the above results, in our study population, 11.1% of patients having subfertility, also have a history of mumps infection during their childhood.

Although Sri Lanka is among the low TB prevalence countries in the South East Asia region,[17] we included history of TB in our questionnaire to analyze the prevalence of TB among patients with infertility. A study done on reproductive tract TB and male infertility in India has also stated that tuberculosis is an uncommon cause of male infertility.[15] In our study population also we had only one patient with a history of TB, which confirms the above findings from India.

There were no sufficient studies found in the literature to establish the prevalence of having a history of dengue fever among patients with subfertility. Since 1.3% of our study population had a history of dengue fever, further studies are needed to see the impact of dengue viral fever on male infertility.

When considering the genetic basis of male infertility, family history of infertility plays a main role. Studies have estimated that nearly 50% of infertility cases are due to genetic defects.[18] In our study 2.4% of patients had a positive family history for male factor subfertility and 1.4% had a family history of androgen deficiency. Identifying the trends in the epidemiological patterns of male infertility and recognizing the contributory factors will generate an understanding and awareness regarding this health issue and will aid the future researchers.

CONCLUSION

Mean age of the study population was 34.30 years. Majority of patients belonged to the age group of 31-40 years and mainly consisted of patients engaging in blue collar jobs. Regarding the types of subfertility, 92.3% of our study population had primary subfertility whereas 7.7% had secondary subfertility. Factors such as smoking, alcohol consumption, infections such as mumps and TB and exposure to pesticides and high temperatures had a significant influence on male infertility. Positive family history for male factor subfertility was there in 2.4% of patients and 1.4% had a family history of androgen deficiency. New studies should be done over large sample in different cultural and different geographical areas to get a more comprehensive understanding.

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