

KNOWLEDGE REGARDING SUBFERTILITY AMONG PATIENTS ATTENDING A TERTIARY CARE HOSPITAL IN CENTRAL SRI LANKA



Original Research Article

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ABSTRACT

The study was a cross sectional descriptive type study. Patients between 18 to 40 years of age attended general surgical and subfertility clinics, Teaching Hospital Peradeniya were selected in to this study using Systematic random sampling method. The study was based on a closed ended self-administered questionnaire which was designed to collect demographic data and assess the level of knowledge regarding infertility. The collected data was analyzed under the topics of socio demographic factors, highest education level, knowledge regarding male risk factors, knowledge regarding female risk factors, false believes regarding causative factors of subfertility and knowledge regarding treatment options available for subfertility.

As the results there was a poor level of knowledge regarding subfertility in Sri Lankan general population. Sub fertile group has significantly higher knowledge than fertile and unmarried groups, but no significant difference between fertile and unmarried groups. People who studied more years in the school had more knowledge regarding subfertility. Knowledge regarding risk factors associated with male and female subfertility was poor, but there was a good knowledge regarding treatment options available for subfertility..

Index Items-

subfertility,
 knowledge,
 general population

I. INTRODUCTION

Infertility is a common medical condition affecting 13% - 15% of couples worldwide (1). It is not just a medical condition, but it is having huge psychological, social and marital conflicts (2). The medical definition of infertility is the failure to conceive after 12 months of unprotected sexual intercourse (3). People should know this time limit to decide when to seek medical advice for subfertility. Primary infertility is the inability to conceive after one year of unprotected sexual intercourse with no previous conceptions. Secondary infertility occurs when couples who have previously conceived children are now unable to conceive (3, 4). In a research conducted in Pakistan only 25% correctly identified the fertile period of a female menstrual cycle (5). This shows poor knowledge about fertility which could delay conception. In that case delayed conception is merely due to deficit in their knowledge, not due to any other factor causing subfertility.

There are male and female factors that can cause reduced fertility. There are a number of researches associating age, weight, smoking and STI (sexually transmitted infections) to reduced fertility (6,7). There is also emerging, but inconsistent, evidence of associations between alcohol consumption (7) concluded in their review of the literature that there is sufficient evidence to recommend that couples attempting to conceive should limit or abstain from consuming alcohol. Similarly, there does appear to be convincing evidence that increasing levels of stress are associated with reduced fertility (7,8). They can be controllable and if there is a good knowledge regarding risk factors, preventive measures can be taken. There are a lot of myths and wrong beliefs. Some people think that subfertility is due to supernatural forces or evil powers (2, 5, 9) while some people think that prior usage of contraceptive pills and intrauterine contraceptive devices causes subfertility (9). These wrong beliefs can give rise to wrong attitudes toward subfertility and can cause problems in management.

There are number of treatment options available to treat subfertility. They can be tailored to individual problems, depending on the factors contributing to the infertility of a couple. Assisted reproductive technologies are no longer considered experimental, and the success rates obtained are improving. Knowledge regarding these options among general population will make the management easier, but unfortunately still some people believe alternatives like faith healers as better treatment options (5, 9).

A cross sectional study done in 2012 assessed knowledge attitude and practices of infertility among Saudi couples (9). It is done with 277 out patients and 104 infertile patients using an interview questionnaire. It revealed that a generally poor knowledge (59%) and a neutral attitude (76%) towards infertility. Mistaken beliefs commonly held by the study participants regarding the causes of infertility were Djinnis and supernatural causes (58.8%), black magic (67.5%), intrauterine devices (71.3%), and contraceptive pills (42.9%). The healer/Sheikh was reported as the primary and secondary preference for infertility treatment by 6.7% and 44.2% of IVF patients, respectively.

In another study conducted in 2008 in Uganda (11), revealed the level of knowledge, attitudes and practices towards infertility among adults aged 18-40 years in Kalisizo, Rakai district and the factors which affect them were assessed to create a basis for its prevention, treatment and control. The study was descriptive in nature, employed mainly quantitative data collection methods using a semi-structured questionnaire. It was found that the majority of respondents had little knowledge on the causes of infertility with 54.0% mentioning it to be running in families due to unmet demands of ancestral

spirits, possession by evil spirits (51.3%), and witchcraft and family planning methods. Over 60% of respondents believed that infertility could best be managed by both the traditional and the modern medical services and that it was more of the woman's problem than a man. Factors like the influence from other people (the significant others), cultural beliefs and values and educational level of an individual were pointed out by the majority as important aspects that affect knowledge, attitudes and practices of people and thus the need to be considered when planning to address the problem of infertility.

Another cross-sectional survey was carried out by interviewing a sample of 447 adults who were accompanying the patients at two tertiary care hospitals in Karachi, Pakistan in 2011(5). They were interviewed one-on-one with the help of a pretested questionnaire. The correct knowledge of infertility was found to be limited amongst the participants. Only 25% correctly identified that infertility is pathological and only 46% knew about the fertile period in women's cycle. People are misinformed that use of IUCD (53%) and OCPs (61%) may cause infertility. Beliefs in evil forces and supernatural powers as a cause of infertility are still prevalent especially amongst people with lower level of education. Seeking alternative treatment for infertility remains a popular option for 28% of the participant as a primary preference and 75% as a secondary preference. IVF remains an unfamiliar (78%) and an option (55%).

In year 2008 there was a research regarding knowledge about fertility risk factors, fertility myths and illusory benefits of healthy habits in young people conducted in United Kingdom (12). It is done using a sample of 110 female and 39 male university students. Knowledge scores were based on a task requiring participants to estimate the effect a factor would have on a group of 100 women trying to get pregnant. Items were grouped into: Risk factors (e.g. age, smoking, alcohol consumption, menstrual cycle characteristics, and pelvic surgeries) myths and healthy habits. It is found that young people are aware that negative lifestyle factors reduce fertility but falsely believe in fertility myths and benefits of healthy habits.

In many societies only females are blamed for the subfertility (2, 5). That may be due to poor understanding about male factors causing subfertility. As the knowledge regarding subfertility differs from country to country, this study aims to assess those in Sri Lankan society. The main objective was to determine knowledge, attitude and practice of subfertility among patients who are attending to surgical clinics and the Subfertility clinic at the Teaching Hospital Peradeniya. Another objective was to compare knowledge attitude and practice of subfertility among fertile, sub fertile and patients whom fertility is unknown (e.g. unmarried patients and married patients who have not tried to conceive yet)

As the knowledge regarding male subfertility is worse than that of female subfertility, the priority is given to assess those of male subfertility and it will be helpful to identify the areas about which the general population should be educated by health education programs.

II. MATERIALS AND METHOD

The study was a cross sectional descriptive type study. It was carried out in the general surgical clinics and subfertility clinic at the Teaching Hospital Peradeniya. Patients between 18 to 40 years of age attended general surgical and subfertility clinics from 13.07.2015 to 14.08.2015 were selected in to this study using Systematic random sampling method. Severely ill patients who were unable to answer the questionnaire, Patients who couldn't read and write, Patients who were mentally disturbed were excluded from the study.

The number of subjects was calculated according to the sample size formula for cross sectional studies. According to the literature anticipated population proportion is 60% (10). We have collected data from 426 patients.

The study was based on a closed ended self-administered questionnaire. The questionnaire is initially designed by the research team after doing a thorough literature review. The questionnaire was translated into Sinhala and Tamil. The test–retest reliability was measured in a pilot study of 20 participants before data collection.

- The first part collected demographic data of the patients, such as age, gender, occupation, education and data to assess health facilities and sources of information.
- The second part was to assess the level of knowledge regarding infertility. This part consisted of a total of eight questions.

III. STATISTICAL ANALYSIS AND RESULTS

Table 01- Socio demographic factors

Age group	Male		Female		Total	
	Fertility status	N	Fertility status	N	Fertility status	N
20-25years	Fertile	16	Fertile	12	Fertile	28
	Subfertile	-	Subfertile	12	Subfertile	12
	Unmarried	24	Unmarried	43	Unmarried	67
26-30years	Fertile	21	Fertile	17	Fertile	38
	Subfertile	17	Subfertile	34	Subfertile	51
	Unmarried	15	Unmarried	21	Unmarried	36
31-35years	Fertile	12	Fertile	18	Fertile	30
	Subfertile	5	Subfertile	26	Subfertile	31
	Unmarried	8	Unmarried	12	Unmarried	20
36-40years	Fertile	18	Fertile	44	Fertile	62
	Subfertile	11	Subfertile	25	Subfertile	36
	Unmarried	9	Unmarried	6	Unmarried	15
Total		156		270		426

The statements were concerned with the knowledge regarding the definition of subfertility, fertile period of a female menstrual cycle, different possible male and female factors that may affect fertility and treatment options available for subfertility. The correct response was scored as “1.” Incorrect and “Don’t know” responses were scored as “0.” An overall knowledge score was calculated by summing the scores for the statements. Additionally ten marks were given to the correct definition of subfertility, which is the failure to conceive after one year of unprotected regular sexual intercourse. Thus, the highest possible score was fifty points. The mean percentage score was calculated.

All participants’ privacy was safe guarded. The participants were informed that their decision regarding participation would not affect their treatment or their relationships with their physicians. Only participants, who were willing to participate in the study, after being fully informed regarding the aim of the study and methodology, were included in the study. All participants had the right to refuse the participation or to withdraw from the study before completion. Participants were asked not to mention their names in the answer sheet so as to be anonymous. Data was treated confidentially.

Summary table 2- Description of the study population by participants’ highest educational level

Highest education level	Number	Percentage
< Grade 8	1	0.2%
Grade 8 completed	18	4.3%
G.C.E. O/L	151	36%
G.C.E. A/L	183	43.6%
Graduated	61	14.5%
Other	6	1.4%

Knowledge regarding subfertility

The total population scored a Mean average of 45.24 % (SD=18.29). Fertile group scored a Mean average of 42.33 % (SD=17.68), subfertile scored a mean average of 50.65 % (SD=17.58) and unmarried group scored a mean average of 43.47 % (SD=18.65) (summary table 1). The mean average mark of the subfertile group was significantly higher than the

fertile group ($p < 0.000$) and the unmarried group ($p = 0.003$) as determined by Tukey post hoc test. No significant difference between fertile and unmarried groups ($p = 0.85$).

Summary table 3- Description of the study population by fertility status and a mean average marks for the knowledge part of the questionnaire

Group	N	Mean	Standard deviation	95% confidence interval for mean	
				Lower bound	Upper bound
Fertile	158	42.33	17.68	39.55	45.10
Subfertile	130	50.65	17.58	47.60	53.70
Unmarried	138	43.47	18.65	40.33	46.61
Total	426	45.24	18.29	43.50	46.98

There were statistically significant differences for the mean average marks for the knowledge part of the questionnaire between consecutive educational levels. The combined group of Grade 8 completed and less than Grade 8 scored mean average mark of 27.10% (SD=13.78) and G.C.E.O/L completed group scored 39.09% (SD=15.68). The difference between two groups was statistically significant ($P < 0.033$). G.C.E.A/L completed group scored a mean average mark of 47.38% (SD=18.67). That was significantly higher than G.C.E.O/L completed group ($P < 0.000$). Graduated participants scored a mean average mark of 54.18% (SD=15.55). Though it was higher than G.C.E.A/L completed group, it was not statistically significant ($P = 0.055$). Participants who were not graduated from a University, but having various other education qualifications acquired after completion of G.C.E.A/L (diploma etc.) scored a mean average mark of 50.83% (SD=19.58). It was not significantly different from mean average mark of G.C.E.O/L completed group, G.C.E.A/L completed group or graduated participants' group ($P = 0.46$, $P = 0.98$ and $P = 0.99$ respectively), but it was significantly higher than grade 8 completed ($P = 0.025$).

The first question of the second part assessed the knowledge regarding the definition of subfertility. Only 1.2% of fertile group, 4.6% of subfertile group 0.7% of unmarried group considered time factor in the definition of subfertility as failure to conceive after one year of trying to conceive.

Only 41.1% of fertile group, 63.1% of subfertile group and 42% of unmarried group correctly identified the fertile period of a female. Only 25.9% of fertile group 40.8% of subfertile group and 23.9% of unmarried group thinks that subfertility is a disease condition.

There are two questions to assess the knowledge regarding risk factors for male and female subfertility (summary table 4 & 5).

The maximum possible mark for the question assessed the knowledge regarding factors associated with female subfertility was 11. Total population scored a mean total mark of 5.39 (SD=2.88). Fertile group scored a mean total mark of 4.89 (SD=2.87). Subfertile group scored a mean total mark of 6.29 (SD=2.70) and unmarried group scored 5.10 (SD=2.89).

Summary table 4- knowledge regarding female risk factors

Risk factor	Percentage of patients identified it as a risk factor			
	Total population	Fertile group	Subfertile group	Unmarried group
Menstrual problems	71.8	66.5	87.7	63.0
Mental stress	66.7	58.9	81.5	61.6
Obesity	23.5	20.3	33.1	18.1
Strenuous exercise	24.6	17.7	40.0	18.1
Severe weight loss	36.2	25.9	57.7	27.5
Diabetes mellitus	46.2	44.9	50.8	43.5
Sexually transmitted diseases	50.2	44.9	50.0	56.5
Fibroids	61.0	56.3	65.4	62.3
Surgeries in fallopian tubes/ womb or other pelvic or abdominal surgeries	46.5	43.7	51.5	44.9
Previous use of contraceptive methods	63.8	60.1	70.0	62.3
With the age fertility of a female will go down	75.5	69.6	81.5	77.5

There was a statistically significant difference between groups as determined by one-way ANOVA ($P < 0.000$). Tukey post-hoc test revealed that mean total mark of that question was significantly higher in subfertile group than fertile group ($P < 0.000$) and unmarried group ($P < 0.002$). There was no significant difference between fertile and unmarried groups ($P = 0.778$).

Altogether 271 female participants and 155 male participants included in our study. Female participants scored a mean total mark of 6.02 ($SD = 2.52$) and male participants scored a mean total mark of 4.27 ($SD = 3.12$) for female risk factors. There was a statistically significant difference between groups determined by independent sample T test, female showed a higher knowledge regarding female risk factors ($P = 0.000$). Both male and female participants suffering from subfertility scored higher mean total marks without a significant gender variation (female=6.27, male=6.34). In fertile and unmarried groups males scored lower marks than female (fertile female=5.97, fertile male=3.40, unmarried female=5.78, unmarried male=4.12)

Summary table 5- knowledge regarding male risk factors

Risk factor	Percentage of patients identified it as a risk factor			
	Total population	Fertile group	Subfertile group	Unmarried group
Past history of mumps	55.9	60.8	65.4	41.3
Trauma to genital organs	--	57.6	59.2	62.3
Surgeries done in genital organs	54.0	50.6	53.8	58.0
Sexually transmitted diseases	46.2	38.6	49.2	52.2
Exposure to radiation	40.6	31.6	42.3	49.3
Long term exposure to heat	39.9	30.4	53.8	37.7
Exposure to pesticide	46.7	50.0	52.3	37.7
Long term exposure to some chemicals	56.3	51.9	60.0	58.0
Alcohol or other substance abuse	76.8	77.8	78.5	73.9
Smoking	72.1	72.8	73.1	70.3
Wearing tight underwear	41.5	36.1	51.5	38.4
Obesity	29.1	21.5	42.3	25.4
Diabetes mellitus	43.7	44.3	50.0	37.0
Chronic debilitating physical illness	63.4	58.2	73.1	60.1
Mental stress	51.6	55.7	53.1	45.7
With the age fertility of a male will go down	45.8	55.1	47.7	33.3

The maximum possible mark for the question assessed the knowledge regarding factors associated with male subfertility was 16. Total population scored a mean total mark of 8.27($SD = 4.38$). Fertile group scored a mean total mark of 7.93 ($SD = 3.93$). Subfertile group scored a mean total mark of 9.20($SD = 4.67$) and unmarried group scored 7.80 ($SD = 4.49$).

There was a statistically significant difference between groups as determined by one-way ANOVA ($P < 0.000$). Tukey post-hoc test revealed that mean total mark of that question was significantly higher in subfertile group than fertile group ($P = 0.038$) and unmarried group ($P = 0.025$). There was no significant difference between fertile and unmarried groups ($P = 0.967$).

Altogether 271 female participants and 155 male participants included in our study. Female participants scored a mean total mark of 8.71 ($SD = 4.17$) and male participants scored a mean total mark of 7.45 ($SD = 4.56$). There was a statistically significant difference between groups determined by independent sample T test, female showed a higher knowledge regarding male risk factors ($P < 0.005$).

There was a question to assess the knowledge on false believes regarding causative factors of subfertility (summary table 5). Though majority did not believe super natural powers and evil forces as causative factors of subfertility, majority believed that subfertility can be caused as a punishment for a wrong thing according to their religion and subfertility is a condition running in families.

Summary table 6- False believes regarding causative factors of subfertility

False belief	Percentage of patients did not believe it as a risk factor			
	Total population	Fertile group	Subfertile group	Unmarried group
Super natural powers conducted by some other people	68.3	61.4	71.5	73.2
Evil forces	63.8	58.9	67.7	65.9
Punishment for a wrong thing according to their religion	45.3	43.7	46.9	45.7
Subfertility is a condition running in families (Hereditary condition)	28.2	27.2	33.1	24.6

In the question to assess patients' knowledge regarding treatment options available for subfertility (Summary table 7). Majority was aware about treatment options available for subfertility. Subfertile group had the highest percentage of patients knew about treatment options.

Summary table 7- Knowledge regarding treatment options available for subfertility

Treatment option	Percentage of patients knew about the treatment option			
	Total population	Fertile group	Subfertile group	Unmarried group
medications for female partner	77.2	79.7	80.0	71.7
medications for male partner	78.2	79.1	86.9	68.8
Surgical treatment for female partner	71.8	64.6	81.5	71.0
Surgical treatment for male partner	58.2	54.4	60.0	60.9
Intra Uterine insemination (IUI)	61.5	60.8	70.0	54.3
In vitro fertilization (IVF)	65.7	53.2	79.2	67.4

IV. DISCUSSION

Our study was designed to collect information regarding knowledge on subfertility in Sri Lankan population. Knowledge about infertility is inadequate in many parts of the world. A global survey of almost 17,500 women (mostly of childbearing age) from ten countries revealed that knowledge regarding fertility and the biology of reproduction was poor (13).

A cross sectional study was done in 2012 assessed knowledge attitude and practices of infertility among Saudi couples (9). In that study, Both sub fertile patients and fertile participants showed a low level of knowledge regarding factors that may affect fertility, as indicated by the mean percentage score for knowledge, with a significantly higher level found among sub fertile patients (45.91% versus 41.68%; $t = 2.14$; $P = 0.035$). Our study also showed some sort of similar results. We compared the mean averages of fertile sub fertile and patients whom fertility state is unknown (e.g. Unmarried). The total population scored a mean average of 45.24%. Fertile group scored a mean average of 42.33%, sub fertile group scored a mean average of 50.65% and unmarried group scored a mean average of 43.47% (summary table 1). The mean average mark of the sub fertile group was significantly higher than the fertile group ($p < 0.000$) and the unmarried group ($p = 0.003$). No significant difference between fertile and unmarried groups ($p = 0.85$). It is telling that the knowledge regarding subfertility in Sri Lankan general population, fertile group and unmarried group is poor as in Saudi population, but knowledge among Sri Lankan sub fertile patients is much better than Saudi sub fertile patients. This difference can be due to many reasons. Sub fertile patients might be well educated by health care professionals while they are seeking medical advices for the subfertility. Sometimes they might be curious enough to search regarding subfertility, as they are suffering from the condition. As most of the, fertile and unmarried people don't have that intense desire to search regarding subfertility, mainly they might be having only the knowledge gained from their schools. Knowledge gained several years after being sub fertile is not that important as they should be knowledgeable from very beginning in order to correct any preventable risk factors and to present to a correct health care provider at the correct time. Therefore it is important to take measures to improve the knowledge regarding subfertility among school children.

We found that the people who studied more years in the school had more knowledge regarding subfertility. Though graduated people are in a higher educational level than people who have completed G.C.E.A/L only, there was no significant difference between the knowledge of two groups. That confirms majority gains knowledge regarding subfertility during school age.

Regarding risk factors associate with female subfertility, majority identified menstrual problems, mental stress, fibroids as risk factors. Only about a half of the population knows diabetes mellitus and STDs can be associated with subfertility and only a quarter to one third of the population knows Obesity, Strenuous exercise and severe weight loss can be associated with subfertility. It seems patients are not much aware about factors external to the reproductive system causing subfertility. Up to 70% of the population thinks that previous use of contraceptive methods can be associated with subfertility. It is a wrong idea which can reduce the use of contraceptives. Similarly some other studies revealed that the same thinking pattern was there in some other societies (5, 9).

Compared to the knowledge regarding factors associated with female subfertility, the knowledge regarding male subfertility was lower. Not only regarding female risk factors, even about male risk factors female participants showed a significantly higher level of knowledge. When considering sub fertile group, unlike fertile and unmarried groups, both male and female participants showed a good level of knowledge.

More than 70% of all three groups identified smoking and alcohol consumption as factors reducing fertility, but except for few other factors for which just above 50% marked the correct answer, all other factors were identified by less than 50% of subjects. Few subjects knew (~30%) that obesity can contribute to subfertility. Though 75% of them said with the age fertility of a female will go down, only 45% said with the age fertility of a male will go down. As male fertility, unlike female fertility, remains lifelong though reduces with the age, majority of the population may have a wrong idea that male fertility will not go down with the age.

When considering factor by factor, except for very popular few factors, the knowledge regarding factors affecting fertility was not good. It tells us they were not properly educated regarding those factors.

Female factors like Obesity, Strenuous exercise Severe weight loss and male factors like Exposure to radiation, long term exposure to heat, exposure to pesticide, long term exposure to some chemicals alcohol or other substance abuse, smoking, wearing tight underwear, obesity could be controlled by simple life style modifications, therefore awareness regarding them is important. Unfortunately except for smoking and alcohol, knowledge regarding other factors was not satisfactory. So it is important to take measures to improve the awareness regarding all factors associated with subfertility.

People from all over the world entertain many misconceptions about reproductive health and fertility because infertility is considered a taboo subject. In our study, misconceptions like subfertility can be due to super natural powers conducted by some other people or due to evil forces were not common among all three groups of patients. More than 60% of all three groups refused those as factors causing subfertility. A study conducted by Abolfotouh et al in 2013 to assess Knowledge attitude and practices of infertility among Saudi couples, found that misconceptions about reproductive health and fertility such as black magic, Djinns/supernatural causes were common as subjects identified them as factors causing subfertility in more than 60% . Several other studies also found similar misconceptions commonly held (5,11).

In our study, though majority of them didn't believe super natural powers and evil forces, majority believed that subfertility can be due to punishments for wrong things done by them according to their religion. In Sri Lanka the main religion is Buddhism. Buddhism believes very much about bad effects occurring as a result of wrong things done in the past. Other oriental religions common in Sri Lanka like Hindu and Islam also carry similar concepts. So the religious effect may be the reason for that result.

Our study population is much aware of treatment options available for subfertility. Even IUI and IVF, they identified them as treatment options in more than 60%.

V. CONCLUSION

There was a poor level of knowledge regarding subfertility in Sri Lankan general population. Sub fertile group has significantly higher knowledge than fertile and unmarried groups, but no significant difference between fertile and unmarried groups. People who studied more years in the school had more knowledge regarding subfertility. Knowledge regarding risk factors associated with male and female subfertility was poor, but there was a good knowledge regarding treatment options available for subfertility.

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