Original article

Infertility investigation: socio-demographic characteristics and dropouts of infertile women at Family Guidance Association of Ethiopia (FGAE)

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Abstract: In order to determine the proportion of primary and secondary infertility, the 1991 - 1995 medical records of clients were revised and analyzed. Three thousand three hundred and eighty women indicated their desire to undergo infertility investigations and then counselled for (Visit I), but only 2570(76%) registered for investigation. Ninety six percent of the attendants of the infertility clinic were females, and 58.1% of the registered females were less than 30 years of age and 18% above 35 years. Twenty-two (21.6%) had no formal education and 40.2% had primary education. About 38 (38.3%) had secondary school education and above. The majority of the clients were married (95.0%), housewives (70.4%), and reside in Addis Ababa (87.5%). The cumulative dropout rate was 91.9% of which 86.1% were those who were lost to follow-up. Of the physically examined (2475), 195 (7.9%) were actively censored. The largest number of the dropouts was immediately after visit three followed by visit one. This review shows that only 7% of the counselled and 9.3% of the booked completed the preliminary infertility investigation schedule. Forty-two women reported pregnancy during the process and were excluded from the dropout list. The follow-up discontinuation in respect to all selected socio-demographic variables was again indicated to be highest immediately after visit three. The investigation completion rate is shown to increase with the level of education, and among merchants and office workers. About 50% of the clients sought medical assistance after five to 10-years of infertility. Irrespective of the type, the shorter the duration of infertility, the better was the investigation completion rate. The proportion of primary to secondary infertility was about 2:3. Many infertile women who sought medical assistance failed to complete the essential preliminary investigations and were lost to follow-up. Although further study is necessary to answer why they discontinued, the socio-demographic characteristics indicate that those who are likely to be better economically are better completers of the investigations. The fact that neither the institution nor other centers can make all the essential investigations like seminal fluid analysis, HSG, diagnostic endometrial sampling, etc. in one setting with affordable fee charge may have contributed significantly to this high dropout rate. [*Ethiop. J. Health Dev.* 2000;14(2):127-134]

Introduction

Whilst large groups of women seek to have protection against pregnancy, abort the unwanted or, though rarely, even try to kill after birth, another small group earnestly seek to achieve pregnancy and have children. Globally, about 10 - 15% of couples fail to achieve pregnancy between puberty and the menopause (1). This statistics varies by regions, countries and even by areas within a country. It is estimated that infertility rates could be as high as 30% in some Sub-Saharan African countries and it has been proposed that if 15% of women aged 20-29 years are categorized as infertile, this would indicate the existence of a serious problem (2). The exact statistics for the whole of Ethiopia is not available but the magnitude of its social and medical problems is well understood. The Tanzanian community study of women aged 18-45 years revealed the prevalence of infertility to be 22.6% (primary 4.3% and

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secondary 18.3%) (3). According to the 1990 Ethiopian National Family and Fertility Survey Report, among the childless women and those who have only one child, 87.0% wanted more children (4). Failure to have live birth (pregnancy wastage, child loss) leading to childlessness further compounds infertility. Childlessness is 20-40% in parts of Sub-Saharan Africa (5). In Ethiopia, childlessness in rural areas was reported to be ranging from 2.8% in Gammugoffa to 19.3% in Illubabor Zone among women aged 59 and over (6).

In Ethiopia, there is a high prevalence of STI causing 19% of morbidity in the reproductive age group in towns (7). A study in five hospitals of Addis Ababa showed that 53% of the maternal deaths and 40% of the obstetrics/Gynaecological beds were occupied by patient with complications related to illicit abortions (8). The majority of the deliveries are attended by untrained persons and often under unhygienic conditions (91%) (9). Eighty five percent of the total population lack adequate health service infrastructures. These and others are some of the factors to make speculation of high prevalence of infertility, primarily as the result of ascending pelvic inflammatory disease. The rampant prevalence of tuberculosis in the country and the frequent intra-operative observation of tuberculous salpingitis during tubal surgery would also make hematogenous spread a significant cause of infertility in this country.

Infertility causes so much distress that the couples require sympathy, understanding and help within the realistic limitation. Infertile couples are so desperate that world over-population is never their concern. Investigations to find the cause and treat are therefore worthwhile. The infertility investigation should be carried out in a systematic manner from a simple, non-invasive to the more complicated and may be invasive ones in consideration of the common pathology in the locality. Unfortunately, the investigation and management of infertile couples are slow, time consuming, inadequately funded but paradoxically costly. The management of infertile couples involves several medical specialists and is always challenging, often disappointing, although sometimes rewarding. A number of women become pregnant during the investigation; however, the older the woman and the longer the duration of infertility the less is the chance of pregnancy (1).

The 1990, the Addis Ababa Family and Fertility Survey (4) showed the proportion of women aged 15-49 years as follows:

Age group	Percent
15-19	27.0
20-24	19.4
25-29	14.9
30-34	13.4
35-39	12.8
40-44	17.1
45-49	5.4

At the time of the survey, 40.6%, 2.3%, 9.2%, 4.6% of them were married, separated, divorced and widowed, respectively. The same study on formal education indicated primary (1^{st}-6^{th}), 6.3%; junior secondary (7^{th} - 8^{th}), 3.2%; higher secondary (9^{th}-12^{th}), 4.3%; the above 12th, 0.3%. The religious composition of the sampled survey result showed 77.1% Christians and the rest Muslims. The Addis Ababa maternal mortality study by Kwast from Sept. 1981 to Sept. 1983 (10) also revealed that 76.2% of the survey population aged 13-45 years were homemakers (fulltime) while 20.7% had employment and 3.1% were students.

As there is no specialized infertility management center in the country, the women are observed to shift from one health service institution to the other, including the private sectors - thus, repetition of examinations and investigations, wastage of resources and time are inevitable. Moreover, it is observed that

among those who sought and commenced investigations, many stop in the process, often start late in fourth or early fifth decade of their ages. Barriers to complete investigation of the couples are not examined so far in this and other developing countries. Determination of the prevalence of the type of women infertility in such clinical setting does give baseline information for future community-base study.The objective of this review is to see the pattern of the clients' attendance and determine dropouts during the investigation, its relation to some socio-demographic characteristics, and type of infertility.

Methods

The Family Guidance Association of Ethiopia is a non-governmental, non-profit-making humanitarian organization promoting family planning activities in the country. Understanding that infertility management is an integral part of family planning, its central clinic has devoted two late afternoons (Wednesdays and Fridays) for the purpose and is conducted by obstetricians and gynecologists with other supporting staff.

The clients' appointment visits, although adaptable based on the clinical findings, has the following general pattern:

Visit I - Counseling and appointment.
Visit II - Booking, history, and physical examination, and plan for further actions. For those who are not actively censored laboratory examination (Hb., WBC, Diff., ESR, VDRL, urine analysis, etc.) is requested.
Visit III - Laboratory test result and request for seminal fluid analysis
Visit IV - Seminal fluid analysis result and request for hystero-salpingography.
Visit V - Hystero-salpingography results.

Data from medical records of individuals whose complaint was infertility, counselled on the subject and booked for the first time for investigation from Jan. 1, 1991 to June 30, 1995 (four and half years period), were reviewed. There was no fixed time interval between visits within the study period. The revision commenced 10 months after the last booking date (June 30,1995) for the study purpose and took three months to complete. The study focused on the subgroup of clients who stopped investigation at different levels of follow-up during the stated period and compared with those who completed (visit V). The socio-demographic data collected were age, residency, occupation, education, marital status, religious background, and number of formal marriages. The attendance and defaulters at each visit with the type of infertility were also recorded. Those who stopped were categorized as actively censored or lost to follow-up. The data were entered and analyzed using DBASE IV and EPI5 software computer programmes. The dropout rates were calculated and its relationship with the socio-demodraphic factors analyzed.

Operational Definitions

Primary infertility means the woman has never conceived despite cohabitation and exposure to pregnancy for one year.

Secondary infertility means that the woman has previously conceived but subsequently was unable to do so despite cohabitation and exposure to pregnancy for a period of one year.

Active censoring is applied to clients who were found not to satisfy the definition of infertility, have pelvic masses and therefore, referred to hospitals for gynecological operations, were in climacteric period or became pregnant in the course of investigations.

Lost to follow-up are clients who did not inform about their decision to abandon or postpone investigation and failed to return for the subsequent visits for more than six months after the end of the recruitment for the study .

Dropout is a combination of both lost to follow-up and actively censored subgroups.

The climacteric period is diagnosed clinically after considering the age, symptom-complex ,

and physical gynecological findings. In doubtful cases, gonadotrophic and ovarian steroid hormones are determined.

A clinical pregnancy was defined as a history of amenorrhea and other pregnancy signs and symptoms with a positive urinary pregnancy test in very early cases.

Result

During the four and half years period, 3, 450 individuals with only 70 (2%) males came to the FGAE with the problem of infertility and were counselled. Of the 3380 females counselled (visit I) 2570 (76%) came as appointed and registered for investigation.

Table 1 shows the attendance and dropout pattern and the rates. Only 218 of whom have completed the preliminary investigations making 6.5%and 8.5% of those councelled and booked, respectively. The total dropouts were 3104/3380 (91.9%); of which 2909/3105 (93.7%) were lost to follow-up. Among those who have completed visit II (2475), 195 (7.9%) were actively censored. The actively censored ones were those who were found to have big Pelvic mass (90), in climacteric period (85), and those that do not satisfy the definition of infertility (20) (less than one year of exposure to unprotected coitus 9, and repeated pregnancy wastage 11). The highest number of lost to follow-up cases (972) were after the 3rd visit while 574/821 (70%) failed to appear for visit V. Forty-two of the clients reported pregnancy and were ascertained, making the pregnancy rate after councelling and booking to be 1.24%. and 1.6% respectively. There is no significant difference in the pregnancy rate between the primary (1.5%) and secondary (1.7%) infertility cases.

Table 1: **Attendance, drop out pattern and rates, FGAE, Jan. 1, 1991 - June 30, 1995**

Visits	No. of clients' per visit	Attendance rate	Actively censored due to		Lost to follow-up	dropout per visit	commu-lative Rate
			Pregnancy	Others			
Visit I (councelling)	3380	100%	1	- -	809	24.0%	24.0%
Visit II (Booking)	2570	76.0%	-	-	95	4.0%	26.8%
History &P/E	2475	73.2%	8	195	459	26.8%	46.4%
Visit III (Lab. Results)	1813	53.6%	20	-	992	55.8%	76.3%
Visit IV (SFA Results)	801	23.7%	9	-	574	72.8%	93.6%
Visit V (HSGresults)	218	6.5%	4	-	-	1.8%	100%
Total	-	-	42	195	2909	-	-

Table 2 displays the socio-demographic characteristics of clients against dropouts at each visit after registration.The characters are reported as stated by the clients and recorded by the registering nurse on the booking day (visit II). The peak ages of the attendants were 25-29 years (34%) and those above 35 years were 18.0%. The ideal reproductive age bracket (20-29 years) makes 55.5% of the population. About 21.6% of the women had no formal education while 40.2% and 38.3% of them have had elementary, secondary and higher respectively. Most of the clients were from Addis Ababa (87.5%) and the rest were from other towns (5.9%) and rural area (6.2%). Married women were 2395 (95%); of which 56.1%, 35.3% and 6.5% of them were living with their first, second and third husbands, respectively. The number of marriages ranges was 1-7. Three and half percent were not married but still wanted to undergo infertility investigation. All the

Table 2: **Socio-demographic characteristics by level of follow-up discontinuation, FGAE, Jan. 1, 1991 - June 30, 1995**

	Visit II		Visit III After lab. (%)	Visit IV SFA(%)	Visit V HSG(%)	Total (%)
	Booking (%)	Hist & P/E(%)				
Age in years (n = 2567)						
15-19	2(3)	20(3.3)	28(42.2)	13(19.7)	3(4.5)	66(2.6)
20-24	20(3.6)	123(22.2)	230(41.6)	143(25.9)	37(6.7)	553(21.5)
25-29	24(2.7)	196(22.5)	339(38.8)	223(25.5)	91(10.4)	873(34.0)
30-34	13(2.1)	146(23.8)	243(39.6)	141(23.0)	71(11.6)	614(23.9)
35-39	27(6.4)	159(37.9)	138(32.9)	59(14.1)	36(8.6)	419(16.3)
40-44	8(24.2)	12(36.4)	10(30.3)	13(9.1)	0	33(1.3)
45-48	1(11.1)	5(55.6)	3(33.3)	0	0	9(0.4)
Occupation (n = 2551)						
No	1(2.9)	11(31.4)	15(42.9)	5(14.3)	5(14.3)	35(1.4)
House wife	56(3.1)	442(24.6)	711(39.6)	442(24.5)	146(8.1)	1797(70.4)
Office Worker	15(3.8)	115(29.3	123(31.4)	77(19.6)	62(15.8)	392(15.4)
Soldier	0	1(25.0)	3(75.0)	0	0	4(0.2)
Laborer	10(4.7)	64(29.9)	90(42.1)	39(18.2)	11(5.1)	214(8.4)
Student	2(11.1)	5(27.8)	8(44.4)	2(11.1)	1(5.6)	18(0.7)
Merchant	8(10.4)	16(20.8)	28(36.4)	13(16.9)	12(15.6)	77(3.0)
Bar tender	0	1(12.5)	6(75.0)	1(12.5)	0	8(0.3)
Farmer	1(16.7)	2(33.3)	1(16.7)	1(16.7)	1(16.7)	6(0.2)
Education (n = 2483)						
No	16(4.1)	93(24.0)	146(37.7)	106(27.4)	26(6.7)	387(15.6)
Read and write	8(5.4)	41(27.5)	58(38.9)	39(26.2)	3(2.0)	149(6.0)
1-8	26(2.6)	255(25.6)	418(41.9)	223(24.4)	75(7.5)	997(40.2)
9-12	31(4.4)	177(25.0)	271(38.2)	151(21.3)	79(11.1)	709(28.6)
12+	10(4.4)	70(31.1)	65(28.9)	42(18.7)	38(16.9)	225(9.1)
University	2(12.5)	4(25.0)	1(6.3)	3(18.8)	6(37.5)	16(0.6)
Marital status (n = 2532)						
Single	10(11.5)	30(34.5)	36(41.4)	6(6.9)	5(5.7)	87(3.5)
Married	78(3.3)	916(38.2)	916(38.2)	566(23.6)	227(9.5)	2395(95.0)
Divorced	3(8.1)	20(54.1)	20(54.1)	1(2.7)	3(8.1)	37(1.5)
Widow	0	1(50)	1(50)	0	0	2(0.1)
Residence (n = 2532)						
Addis Ababa	84(13.8)	580(26.2)	877(36.6)	470(21.2)	205(9.3)	2216(87.5)
Other town	7(4.7)	40(26.8)	54(36.2)	32(21.5)	16(10.7)	149(5.9)
Rural	4(2.5)	30(19.1)	43(27.4)	66(42.0)	14(8.9)	157(6.2)
Unclassified	0	3(30)	5(50)	2(20)	0	10(0.4)

Note: Sample size vary due to missed information

singles fullfill the operational definition of infertility in terms of exposure to the risk of pregnancy and its duration. Most of them cohabit with their male sexual partners and intend to go into marriage; but only if they are assured of the potential of having babies later. The housewives (70.4%) make the bulk of the population followed by the office workers of various classes (15.4%). About 77.4% and 12.6% of the women belong to the Christian and Islamic faith, respectively.

Irrespective of the socio-demographic variables, the peak dropout is after visit III. The higher the educational standard, the better the completion rate (5.4% in those without formal education and literacy to 37.5% in university graduates). Comparing the group with less than grade 8, (including the no education) with those above grade 8, using chi square test, the significance is very high ($p < 0.01$). The completion rate is also better with those age 25-34 years (10-11%), office workers (15.8%), merchants (15.6%), and farmers (16.7%). Again office workers and merchants, when compared separately with the housewives that make the majority, the differences are significant ($P < 0.01$ and 0.02, respectively). No significant difference was detected in completion status in respect to residential area and marital status. The poor completers are those who are married more

Table 3: **Type and rate of infertility by level of follow-up discontinuation, FGAE, Jan. 1, 1991 - June 30, 1995.**

Type	Booking		H & P/E		After Lab.		SFA		HSG		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
Primary	17	1.7	214	21.7	380	38.5	284	28.8	91	9.27	986	39.4
Secondary	30	2.0	435	28.4	607	40.0	298	19.6	147	9.7	1517	60.6
Total	47	1.9	649	25.9	987	39.4	582	23.3	38	9.5	2503	100.0

than four times or single, age less than 20 or more than 35 years, and bar girls.

Table 3 classifies the type of infertility and number of dropouts at each visit level. The prevalence of primary and secondary infertility is 39.4% and 60.6%, respectively. The peak dropout is after visit III. The investigation completion rates are not significantly different among the fertility types (9.2 and 9.7%) though the primary infertile ones show a better attendance record up to visit IV. Table 4 shows the relation of the duration in years of infertility to that of dropout level. The peak of the dropout is after visit III again except after 20 years when the peak tends to shift to the left (visit II). The completion rate of the investigation declines from 10% to zero as the duration of infertility increases.

Table 4: **Type and rate of infertility by level of follow-up discontinuation, FGAE, 1990-1995.**

Duration in years	Booking	H & P/E	After Lab.	SFA	HSG	Total
1-4	14(1.3)	280(25.4)	458(41.5)	242(21.9)	110(10)	1104
5-9	16(2.0)	192(23.9)	304(37.9)	208(25.9)	83(10.3)	803
10-14	8(2.4)	86(25.5)	130(38.6)	83(24.6)	30(8.9)	337
15-19	4(2.6)	48(31.0)	56(36.1)	36(23.2)	11(7.1)	155
20-24	1(1.9)	20(37.7)	17(32.1)	11(20.8)	4(7.5)	53
25-29	0	3(60.0)	2(40.0)	0	0	5
Total	43	629	967	580	238	2457

Discussion

Since its establishment in 1975, clients attending the infertility clinics of FGAE have been progressively increasing each year. Un published reports by Widad et al in the first 4½ years of its establishment (1975-half of 1979) showed total attendance of 1,259 infertile women (11).

Although high maternal and infant mortality rate with high birth rate is a major concern for Sub-Saharan African states, but still infertility, with all cultural, social, psychological, and other medical stigma needs better attention. The fact that only 2% of the males sought medical assistance clearly shows the traditional/ cultural notion that infertility in a couple is because of the female partner. A Tanzanian report (12) shows infertility to be 5% of gynecological admissions and 30-50% of outpatient consultations. The incidence of primary and secondary infertility in this study was 39.4% and 60.6% respectively. When compared with some infertility clinic reports, it is about equal to Kenyan studies (13), 30.4% and 69.6% in the USA (14), and 67.7% and 33.3% in Papua, New Guinea (15). The fact that primary infertility is higher than the secondary in Papua New Guinea, in contrast to the findings from other countries' may suggest different etiological factor(s). The Tanzanian community-based study clearly showed a stable primary infertility throughout age ranges whereas secondary infertility rates show a steady increase as the woman becomes older. Significant difference was not observed between the urban and the rural districts of Tanzania in their infertility rates (2).

The presented age is as reported by the client on registration. A difference in the age distribution is notable between this study and that of other East African reports. In this study, age less than 30 years accounts for 58.1% of the total population and 18% were above age 35 years whereas, 75% of infertile women attending infertility clinics both in Nairobi (Kenya) and Dare salam (Tanzania) were reported to be less than 30 years of age. This review shows that, in Addis Ababa, infertile women seek medical help late in the reproductive age and consequently poor management outcome is anticipated. This is further supported in this review by the fact that many of them were coming for investigation in their climacteric period and were actively censored (3.4%). The exact age of the clients is essential for infertility management, but this important information is lacking in most of our clients. Moreover, even among the few who know or calculate their ages, under-reporting is generally accepted as normal (2). An attempt has been made to find out the extent of the difference between the reported age and the indirectly calculated age by interviewing randomly selected 618 infertile women for the purpose in 1996 by the author (unreported). The indirect age calculation centered on social, personal, and/or national events around menarche. The events of significance to the clients may be marriage, first pregnancy and the age of the child, a school grade, change of government etc. The interval in years between these events and the menarche fixed at age 14 years up to the investigation year is calculated. The under-reporting age range was 1-12 years. The older the women, the bigger the difference. The mean of the difference between the calculated and reported ages were 6.81, 3.9 and 2.2 years for the age groups of more than 35, 25-34, and those less than 24 years, respectively. This preliminary finding strongly indicates that many of our clients are older than the stated age presented in this study.

The extent and the significance of the patient dropout during infertility investigation have not been studied so far in this country. The dropout rates after visits I, II, III, and IV were 23.9%, 30.5%, 53.6%, 70.0%, respectively. The highest number of client dropouts is after visit III (992) which is 53% of the total visit. The high dropout during the infertility management was common in other places also. The cumulative dropout rate in an assisted reproductive technology program (ART) consisting of only three treatment cycles was shown to be 62.4% even when the expenses are covered by insurance companies (16); the highest dropout per visit was after cycle 2 - 66.1%. The terminal stage of the follow-up (visit V) in this study also showed the highest dropout rate of 70%. Although the comparison was between the group under investigation in our cases and that of treatment in the other, infertile women of different socioeconomic backgrounds and environmental settings still manifest similarity in attendance failure. The total dropout, active (237) and passive (2909), in this study is 3146/3380 (93.1%). Active censoring was shown to be much less frequent than passive censoring and the denominator is the population of visit II (2570) except for one pregnancy. The corrected rates of active and passive censoring were 236/2570 (9.2%) and 2909/3380 (86.1%), respectively.

In conclusion, very few male partners of infertile couples present themselves for infertility investigation. Around 20% of the infertile women came late in their reproductive life for infertility investigations that could be even higher since the disparity between the actual age and reported one was high and under-reporting was almost universal. The better educated ones were better finishers of their investigations. The ratio of primary to secondary infertility was 2:3. The lost to follow-up makes 86% (2909/3380). The maximum loss was observed immediately after visit III. Why do cleints abandon the investigation and many of them after visit III? The answer may need further study but strong speculative points include failure of the institution to establish facilities for comprehensive investigation by itself, reluctance or uncooperativeness of the male

spouses to give seminal fluid specimens, HSG procedure being expensive and complained by many as painful are probably the prominent causes for the discontinuation. The fact that those with better economic status and education complete the investigation more than the rest support this view.

Better approaches to the investigation from the beginning with the provision of a conducive environment to produce semen specimens may decrease the reluctance and feeling of shame and increases the cooperation of the male partner. Public education on the fact that males also contribute to infertility in a couple may change the traditional belief that a female is the only one to be blamed for. Family can best be planned when there is assurance that couples can be helped to have more children when wanted. Education and promotion of contraceptive methods, distribution and service rendering, short of a comprehensive infertility prevention and management programme does not fulfill the definition of family planning or reproductive well-being.

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