THE PREVALENCE OF INFERTILITY IN WOMEN ATTENDING A GENERAL

PRACTICE IN KATLEHONG

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Natal in partial fulfilment of the requirements for the

degree.

DURBAN 1987

I hereby declare that this dissertation is my own work and has not been submitted before for any degree or examination in any University.

SIGNED : ....

Phosakufa Wilson Mgiba

DATE : .... DAY OF ...., 1987

The work reported in this dissertation was carried out in the Katlehong Township near Germiston in the Transvaal.

To my wife and sons.

SUMMARY

A study to determine the prevalence of infertility in females in a patient population attending a general practice in Katlehong was done over seven weeks in 1985.

In this study 40.6% out of a total of 143 patients interviewed were found to be infertile. Contributing factors to infertility included an advanced age of patients and use of intra-uterine contraceptive devices. Pelvic inflammatory diseases, fibroid uteri, fixed retroverted uteri and a poor socio-economic status of patients were also found to be associated with infertility.

The above factors associated with infertility in females are discussed and recommendations directed to the reduction of infertility are submitted.

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1. INTRODUCTION

According to the population development programme, South Africa (excluding the independent homelands) will have a population of 47,2m by the year 2000, and if the present population growth rate of 2.3% a year were to continue, stability and progress in South Africa would be seriously jeopardised.[1]

While there is so much concern throughout the world about the untoward implications of overpopulation it has to be mentioned that there are families and couples the world over including South Africa which are incapable of having children of their own, despite their desire to have them. These families are as a result usually miserable, frustrated and dejected, and are indeed of concern to the medical fraternity.

The desire for children is stronger than self-interest in beauty and figure in the normal woman, whereas in the man it is less intense.[2]

Children cement a marriage and, when a breakdown of marriage is threatened, as it is at some stage in most if not all marriages, the future welfare of their offspring often deters man and wife from separating; it thus gives them time and opportunity for reconciliation and adjustment which result in permanent and happy union.

Couples may not have children because of a number of reasons e.g. recurrent abortions, perinatal losses, paediatric losses, and failure to conceive. The latter cause is by far the commonest and is also known as infertility. It is this problem, infertility, which is the subject of this study. Secondary infertility develops after an initial phase of fertility. Primary infertility means that the couple has never achieved a pregnancy.

Dott and Fort emphasise that a number of factors interact to bring about success or failure in reproduction and childbearing.[3] In approximately one third of all infertility cases the cause is due to problems in the male, in another third the problem is in the female and in the further third problems are in both the male and the female.[4]

The apparent high prevalence of infertility in the urban Black community of the Katlehong Township near Germiston in the Transvaal prompted the execution of this study in that community. Since infertility is such an extensive subject which needs protracted management and complex investigative procedures which even to date still lead not infrequently to fruitless, often frustrating results to both doctor and patient, it was decided to focus on some of the factors which could affect fertility in women only.

Male infertility was not considered in this project.

2. OBJECTIVES

2.1   To determine the prevalence of infertility in relation to:

(a)   age of patients

(b)   marital status of patients

(c)   parity of patients

(d)   contraception methods used by patients

(e)   socio-economic status of patients

(f)   gynaecological problems of patients.

2.2   To determine those factors which occur more frequently amongst patients with infertility than amongst those patients who do not have this problem

2.3   To advance hypotheses regarding factors which appear to have an association with infertility.

2.4   To recommend measures directed to reducing the occurence of factors associated with infertility.

3. DEFINITIONS

3.1   Infertility: a condition which arises in a woman who fails to conceive, despite her desire to do so, after staying with a man (husband or boy-friend) continuously for two or more years, during which time conception was desired and contraception was not practised.

3.2   Patient: any female person aged 40 years or less who consulted the Researcher's Practice during the study period, and who had stayed continuously with her husband or boy-friend for two or more years.

3.3   Prevalence: the number of patients suffering from infertility seen during the study period.

3.4   Parity: the number of pregnancies which a patient has had and which went up to and beyond 28 weeks.

3.5   Contraception: methods used by patients to prevent pregnancy.

3.6   Socio-economic Status: the social and economic standing of a patient. This was determined from:

      (a)   the patient's highest educational level and occupation, and

(b) the educational level and occupation of the patient's parents.

3.7 Katlehong: a Black township near Germiston town in the Transvaal. It is a typical South African Black residential area with a population of approximately 239 000.

There are about ten General Practitioners in the township with one hospital (Natalspruit Hospital) which also serves the nearby Thokoza and Vosloorus townships.

3.8 Age: the number of completed years of a patient.

3.9 General Practice: a comprehensive practice of medicine at diagnostic, therapeautic, preventive, promotive and rehabilitative levels and which is directed to individual patients and their families in terms of the needs of the particular service.

3.10 Personal Data of Patients: age, marital status, educational level, occupation, parity and contraceptive method used.

4. REDUCTION OF BIAS

A standardized questionnaire and checklist were prepared according to the above objectives. Since only one investigator was involved in the collection, collation and analysis of data, bias was reduced and the problem of multiple observers was avoided.

Sample Group: Each female patient aged 40 years or less who came to the surgery during the study period for any problem, and who had stayed continuously with her husband or boy-friend for two or more years, was included in the study.

Control Group: A control group was not necessary for the purposes of this study. However, controls internal to the study were made. Precise adherence to defined criteria of the problem under investigation was insisted upon and, bias and prejudice were excluded as far as possible in the collation and analysis of data collected.

A computor was not used in this study because the volume of information was relatively small. Hammond et al warn that a pencil guided by a brain remains necessary in the use of modern data-processing equipment in epidemological research.[5] They also recommend a manual data processing method where the amount of information is small because this keeps investigators close to data and thus putting them in the position to observe unexpected oddities.

5. METHOD OF DATA COLLECTION

Data for this prospective study were collected over a period of seven weeks - from 27/10/85 to 14/12/85. The study was conducted at the Researcher's General Practice which is situated in the Katlehong Township. A standardized questionnaire and checklist (Annexure 13.3) were used for the collection of data. Data were collected from history of patients and from physical examination of the patients.

5.1 Data Collected from History of Patients

All patients qualifying to be in the study were each asked the following:

(a) age: number of completed years

(b) marital status: whether married, single, divorced, or widowed. The patients were also asked how long they were living or had lived with their male partners.

(c) parity: the number of pregnancies that went up to and beyond 28 weeks. The following information relating to parity was also asked for:

i)   number of living children, and

ii) year of last pregnancy.

(d)   contraception: methods that were in use at the time of the study and methods that had been used in the past. Only methods that had been used for the longest period of time were taken into consideration in cases where more than one method were used in the past. Year of discontinuation of contraception was also recorded in cases where contraception was no longer desired.

(e)   socio-economic status: this was determined from the educational and occupational status of the patients, and of their parents. In each case the highest educational level achieved and the type of occupation - whether professional, skilled etc. - were documented.

In the case of parents, only the education and occupation of the mothers were considered because generally the mothers are the first ones to know about their daughters' menarches, their daughters' gynaecological problems including sexually transmitted diseases and pregnancy states; and they give advise to their daughters in all these problems. It is these advices, whether bad or good, which the daughters assimilate from their mothers and tend to leave by in their own future. Fathers usually play a minimal or no role at all in the private

affairs of their daughters. Thus the fathers'
educational and occupational status were not
considered in this study.

In cases where the mothers had died, their
education and occupation before death were
considered unless they had died before their
daughters reached 15 years of age in which
case the mothers were recorded as having been
illiterate and unemployed. Before 15 years
of age most African girls have not had many
problems in life yet and thus mothers do little
teaching and advising.   Hence the assumption
that daughters got no education from their mothers
if these died before they (daughters) reached 15
years of age.

(f) Gynaecological history: here the following
     information was asked for from each patient
     interviewed:

     i)   attacks of severe lower abdominal pains
          they have had in the past. The pain was
          characterised by any one of the following:

          - difficulty in walking up-right because
            of pain

          - admission into hospital for pain

- staying away from work for at least

    5 days.

Vague abdominal pains were not considered.

ii) <u>history of abortions they have had in the</u>

    <u>past</u>.

    Each abortion was characterized by:

- termination of pregnancy before 28 weeks

    gestation

- expulsion of placenta and foetus which

    were seen by the patient

- hospitalization of patient with subsequent

    curettage of the uterus.

5.2 <u>Data Collection from Physical Examination of Patients</u>

The physical examiantion was mainly gynaecological
and the following problems were looked for:

(a) fibroid uterus

(b) retroverted fixed uteri

(c) abnormal pelvic masses

(d) Pregnancy states, and

(e) gynaecological malignancies - Papanicolaou
     smears were not done because the test
     was not affordable financially.

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6. LIMITATIONS OF THE STUDY

6.1 Investigations

Although pregnancy tests were done on the urines of patients clinically suspected to be pregnant, it is possible that if blood tests to exclude pregnancy were done on all patients interviewed a much higher percentage of pregnant patients would have been found. The blood tests are expensive and were thus not affordable financially.

Papanicolaou smears for cytology to exclude cervical tumours were also not done because of the investigation's prohibitive cost.

6.2 Socio-Economic Status

The educational and occupational status of the fathers of the patients were excluded in this study. It is possible however that some of these fathers could have been highly educated and well employed which would affect positively the social and economic standing of the patients even if their mother were illiterate and unemployed.

In general, mothers, especially in a Black community, are closer to their daughters' private lives than the fathers are. It is for this reason that the mothers and not the fathers were considered in this study.

7. RESULTS

7.1 Prevalence: Fig. 1, Table 1

A total of 143 patients qualifying to be in the study were interviewed during the study period. Fifty eight (40.6%) of these patients were found to be infertile and the remaining 85(59.4%) were not.

Of the 58 infertile patients, only 7(12.1%) had presented with infertility as a presenting complaint, the rest 51(87.9%) patients had presented with other medical problems but on further questioning they were also found to be infertile.

Fig. 1: Female patients who attended a General Practice in Katlehong during a study in 1985 according to fertility: Numbers and percent (%).

Infertile patients 58(40.6)

Fertile patients 85(59.4)
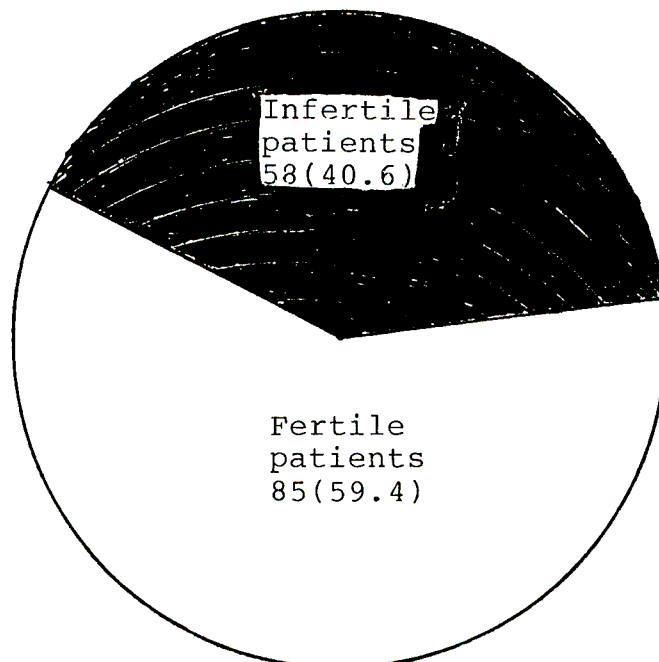
7.2 Fertility and Age: Table 2

7.2.1 Infertility according to age: Fig. 2

Eight (13.8%) of the infertile patients were from 21 to 25 years of age; 22(38.0%) were between 25 and 31 years of age; 18(31.0%) were in the age group 31-35 years inclusive. Ten patients (17.2%) were between 35 and 41 years of age. None of the infertile patients was under 21 years of age.

Fig. 2 Infertile female patients who attended a General Practice in Katlehong during a study in 1985 according to age: Numbers and percent (%)
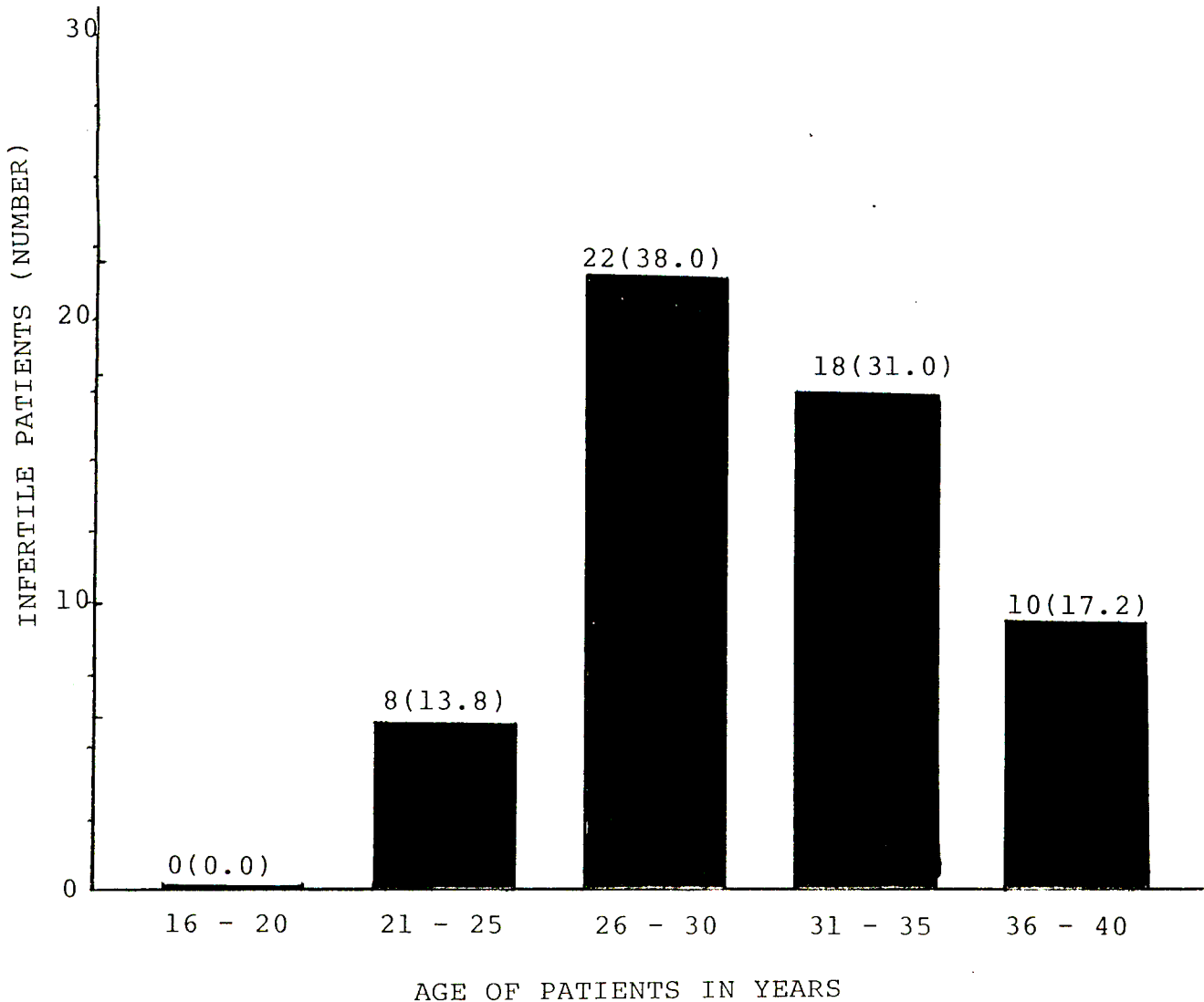
7.3 Fertility and Marital Status: Table 3

7.3.1 Infertility according to marital status: Fig. 4

In the infertile group of 58 patients 40(69.0%) were married; 16(27.5%) were not officially married but were living together with their male partners; none were divorced; and 2(3.5%) were widowed (they stated that they had infertility prior to the deaths of their spouses.

Fig. 4 Infertile female patients who attended a General Practice in Katlehong during a study in 1985 according to marital status: Numbers and percent (%)

MARITAL STATUS OF PATIENTS
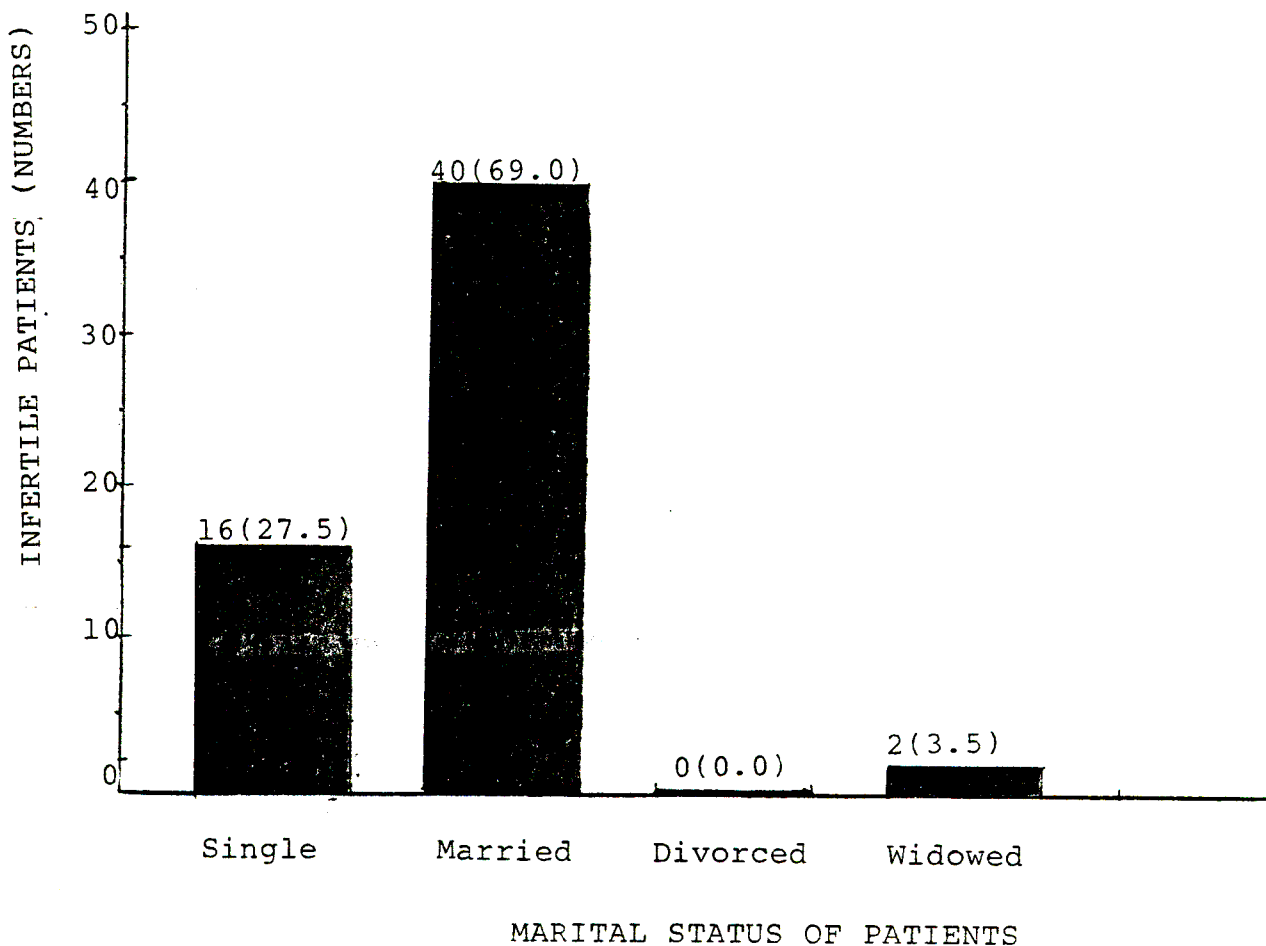
7.3.2 Fertility according to marital status: Fig. 5

Sixty six (77.6%) of the 85 fertile patients were married; 13(15.3%) were not officially married but were living together with their male partners; 5(5.9%) were divorced; and 1(1.2%) was widowed.

Fig. 5 Fertile female patients who attended a General Practice in Katlehong during a study in 1985 according to marital status; numbers and percent (%)

MARITAL STATUS OF PATIENTS

7.4 fertility and Parity: Table 4

7.4.1 Infertility and parity: Fig. 6

Eleven (19.0%) of the 58 infertile patients were
suffering from primary infertility and had thus
zero parity each;   17(29.3%) had one child each;
14(24.1%) had two children each;   8(13.8%) had
3 children each;   7(12.1%) had 4 children each;
and 1(1.7%) had 5 and more children.

At the time of the study, 18.6% of all the
children in this group had died.

Fig. 6 Infertile female patients who attended a General Practice in Katlehong during a study in 1985 according to parity; numbers and percent (%)
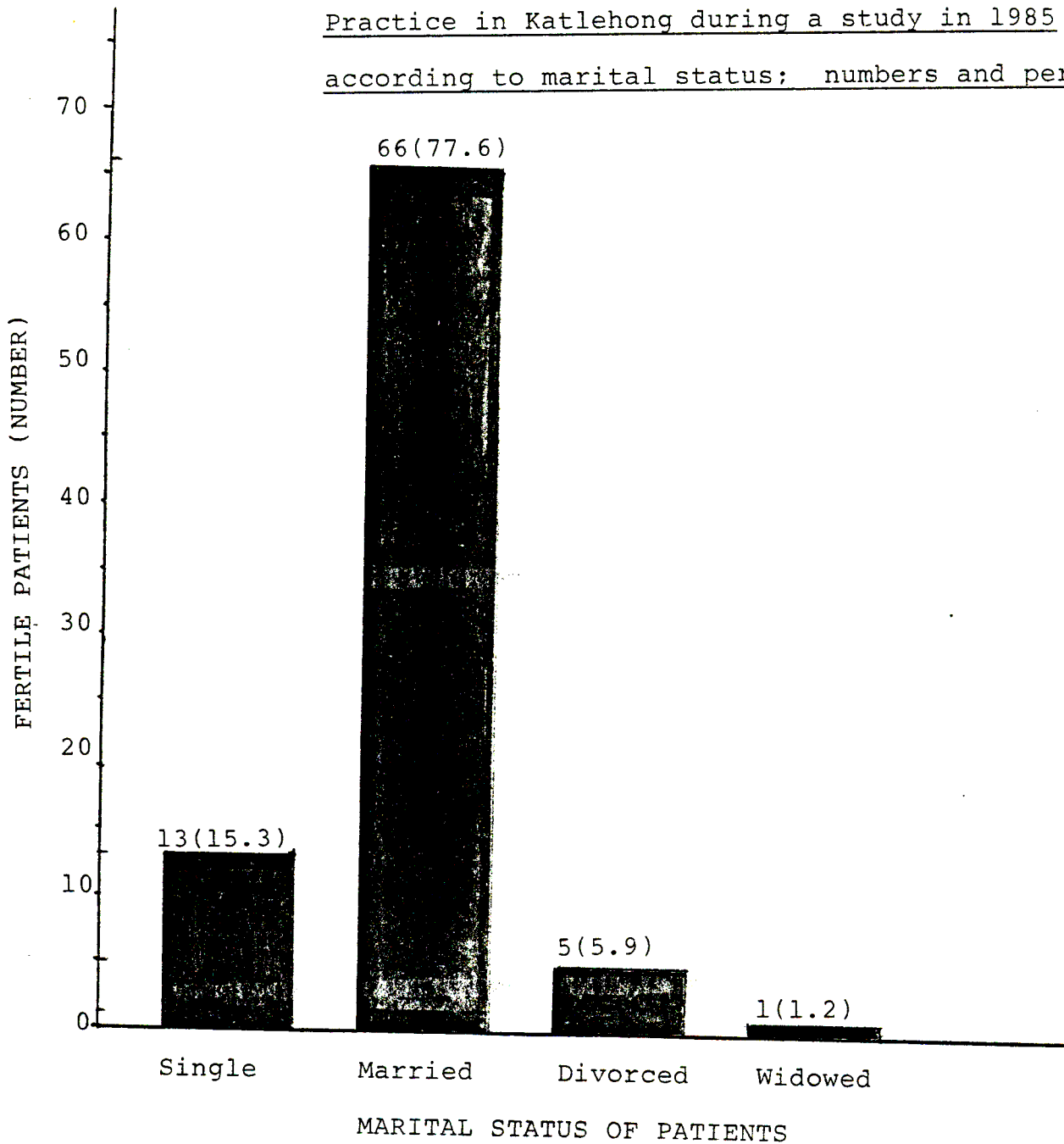
7.4.2 <u>Fertility and parity</u>: Fig. 7

None in the 85 fertile patients had no child;
6(7.1%) had one child each; the majority
29(34.1%) had 2 children each; 24(28.2%) had
3 children each; 12(14.1%) 4 children each;
and 14(16.5%) had 5 and more children each.

In this group 8.9% of all the children had died
at the time of the study.

Fig. 7 <u>Fertile female patients who attended a General Practice
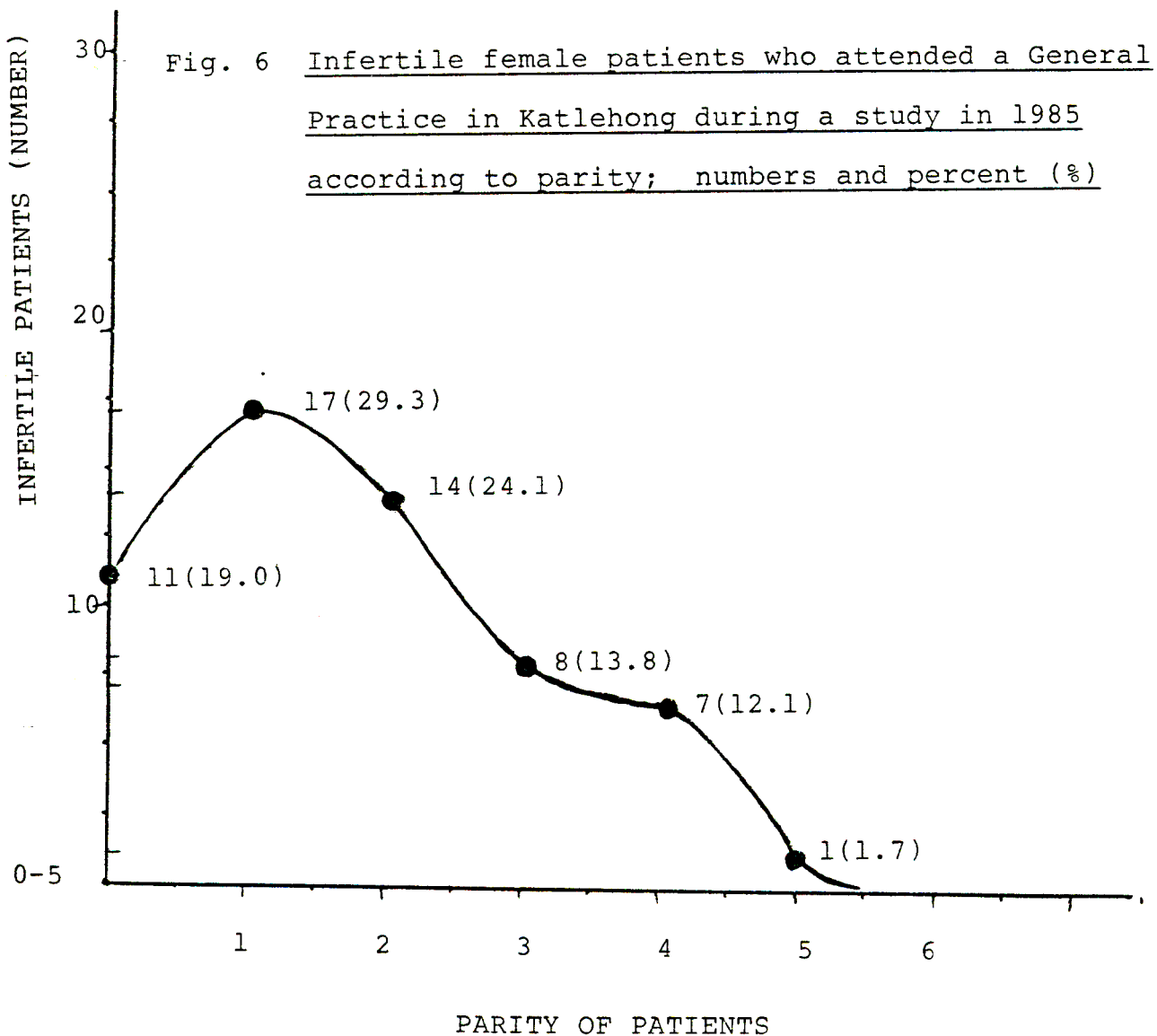in Katlehong during a study in 1985 according to parity:
Numbers and percent (%)</u>
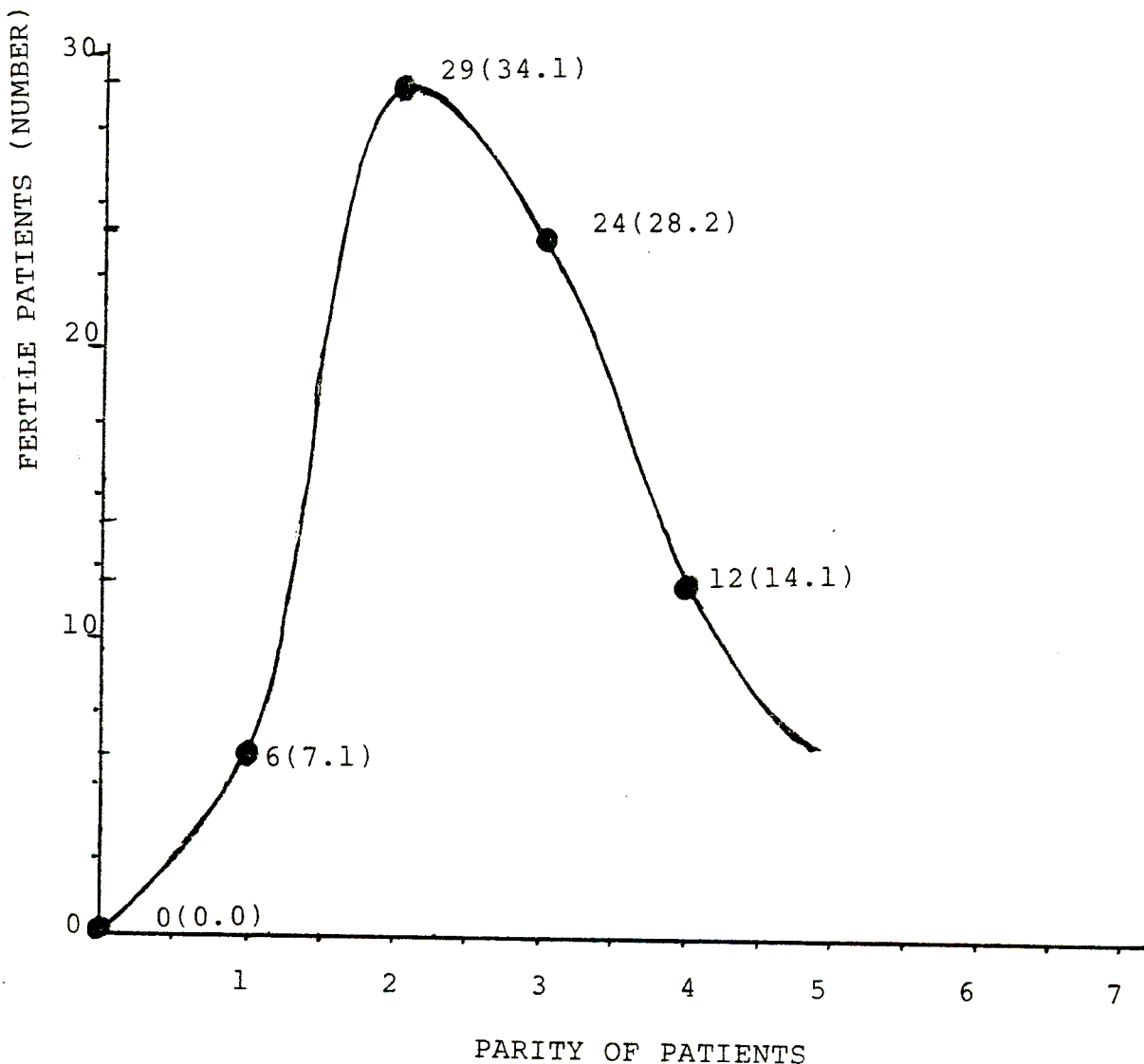
7.5 Fertility and Contraception: Table 5

7.5.1 Infertility according to contraception: Fig. 8

Thirty five (60.3%) of the 58 infertile patients
had never used any form of contraception in the
past; 11(19.0%) had used the intra-uterine
contraceptive device method prior to infertility;
7(12.1%) had used Depo provera; 4(6.9%) had used
oral contraceptives; 1(1.7%) had used nothing
in the past; and 2 patients had been sterilised -
one of these had used nothing prior to infertility
(the 1.7% above) and the other one had used the
intra-uterine contraveptive device method and is
thus included in the 19.0% above.

Fig 8 Infertile female patients who attended a General Practice
in Katlehong during a study in 1985 according to
contraceptive method used in the past: Numbers and
percent (%)

7.5.2 Fertility according to contraception: Fig. 9

Of the 85 fertile patients only 6(7.1%) had never used any form of contraception before; 12(14.1%) had used nothing prior to the study period; 31(36.5%) had used the intra-uterine contraceptive device method in the past; 23(27.0%) had used oral contraceptives; 13(15.3%) had used Depo provera; and none had been sterilised.

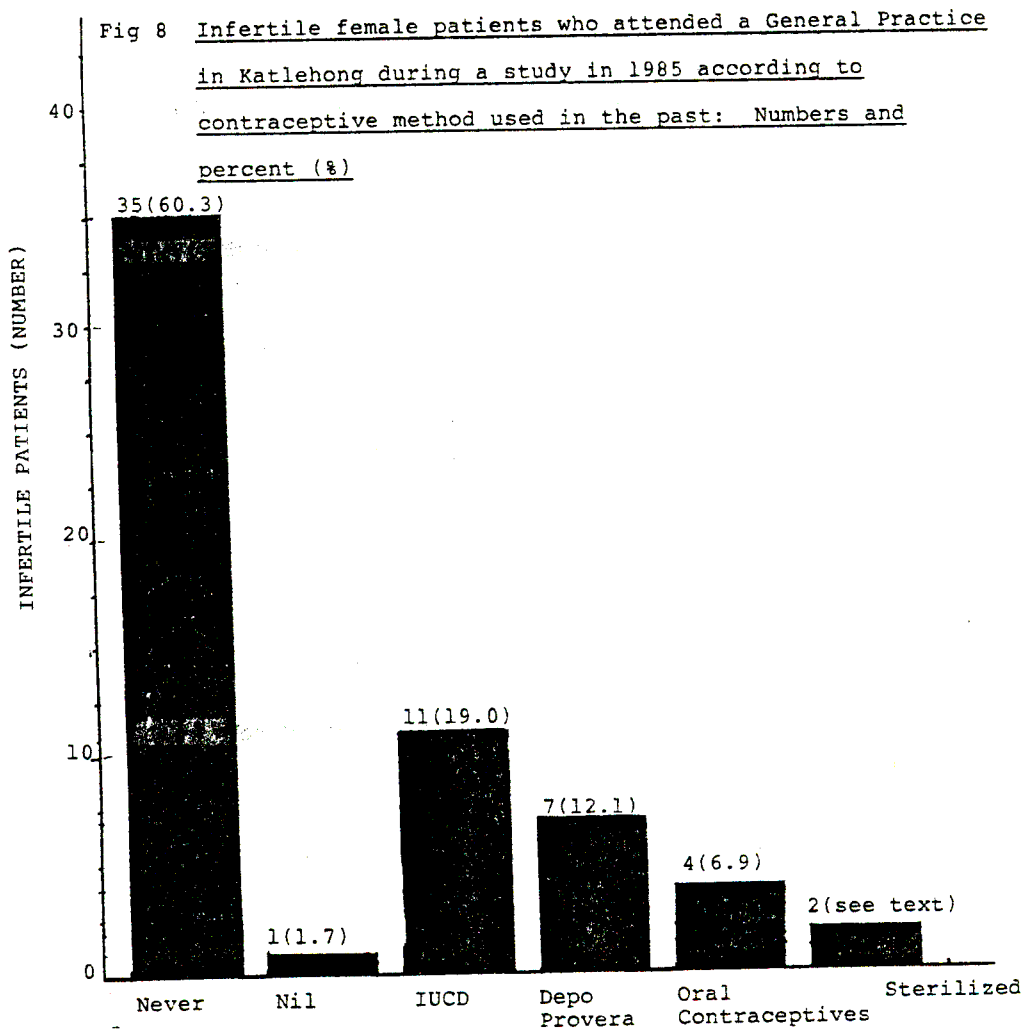Contraception methods which were being used by patients during the study period were not considered in this study.

Fig. 9 Fertile female patients who attended a General Practice in Katlehong during a study in 1985 according to contraceptive methods used in the past: Numbers and percent (%)

CONTRACEPTIVE METHODS USED BY PATIENTS IN THE PAST
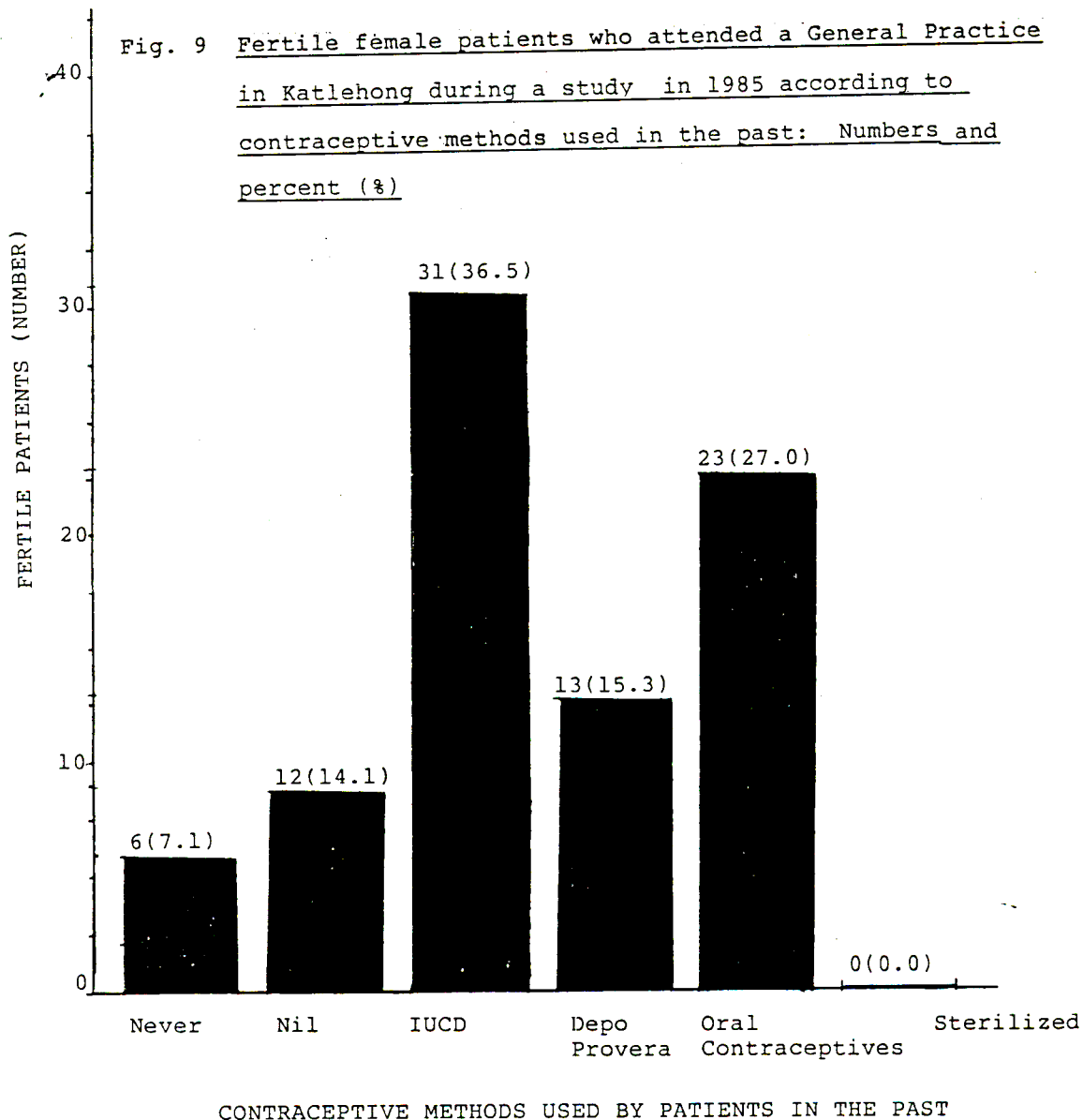
7.6   Fertility and Socio-economic Status of Patients

7.6.1   The infertile group

(a)   Educational status of infertile patients:

Table 6, Fig. 10

Nine (15.5%) of the 58 patients in this group were illiterate;   29(50.0%) had primary school education;   15(25.9%) had secondary school education;   and 5(8.6%) had gone up to and above matriculation.

Fig. 10   Infertile female patients who attended a General Practice in Katlehong during a study in 1985 according to educational levels: Numbers and percent(%)
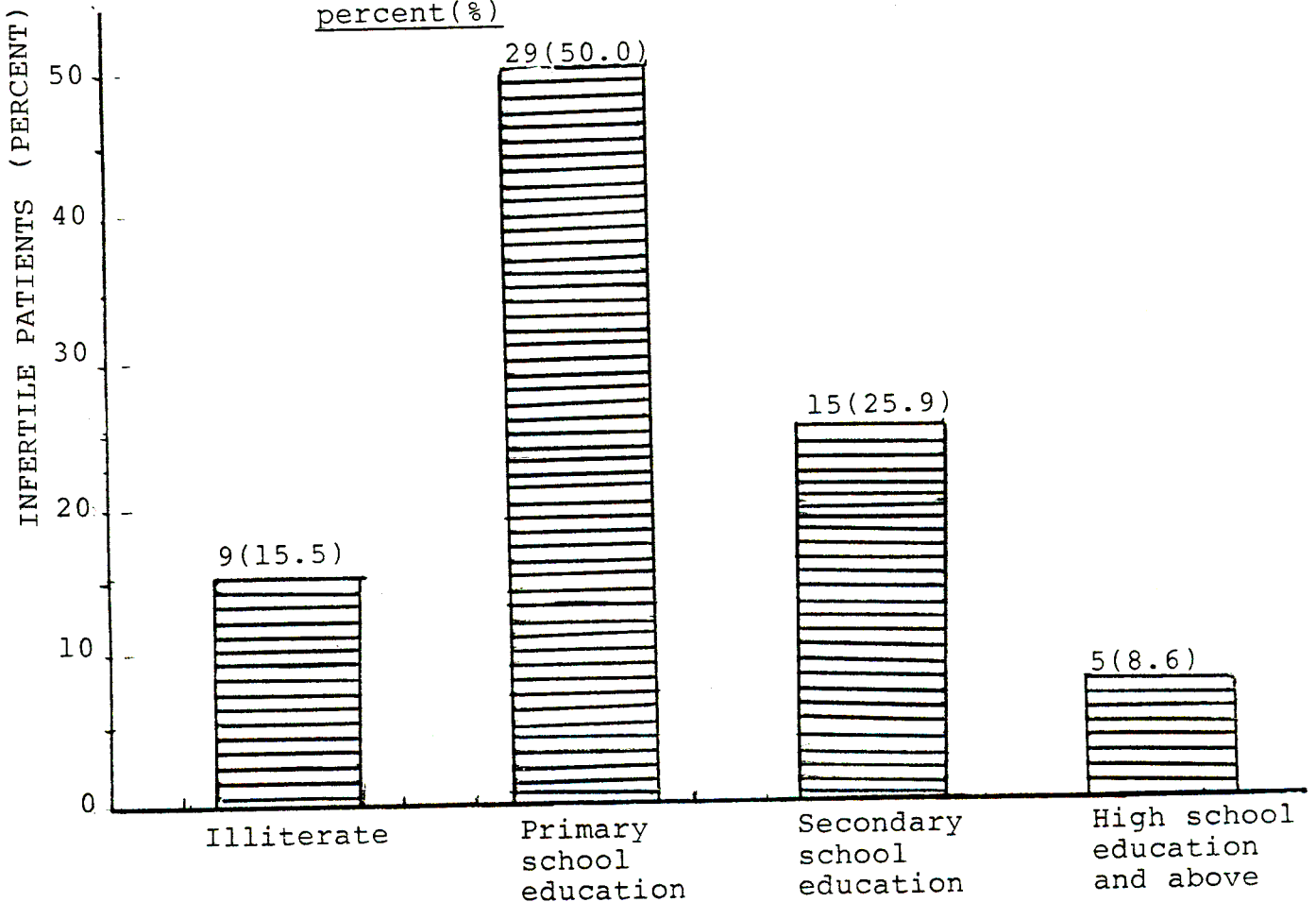
EDUCATIONAL LEVELS OF PATIENTS

(b) <u>Occupation of infertile patients</u>: Table 8

Fig. 11

Of the 58 infertile patients, 3(5.2%) were
doing professional work; 9(15.5%) were
skilled labourers; 11(19.0%) were unskilled
labourers; and 36(60.3%) were unemployed.

Fig. 11 <u>Female patients with infertility who attended a General
Practice in Katlehong during a study in 1985 according to
occupation: Numbers and percent (%)</u>
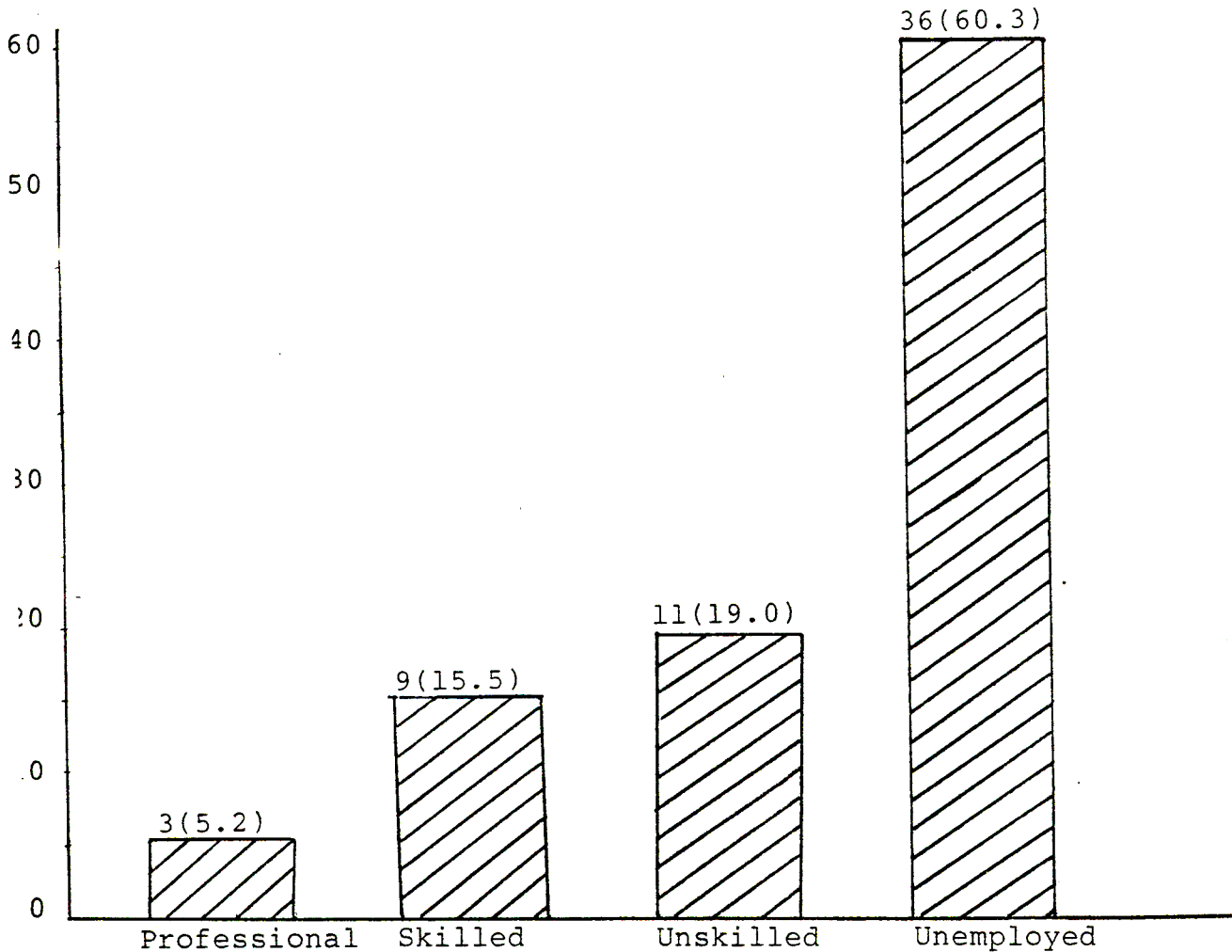
OCCUPATION OF PATIENTS

(c) Educational status of the mothers of infertile

patients: **Table** 7

Fig. 12

Out of the 58 mothers of the infertile

patients 30(51.7%) were illiterate; 17(29.3%)

had primary school education; 5(8.6%) had

secondary school education; and 6(10.4%) had

gone up to and above matriculation.

Fig. 12 Mothers of the infertile female patients who
attended a General Practice in Katlehong
during a study in 1985 according to education:
Numbers and percent(%)

Illiterate 30(51.7)

Primary school education 17(29.3)

Matriculation and above 6(10.4)

Secondary school education 5(8.6)

(d) <u>Occupation of the mothers of infertile patients</u>:

Table 9

Fig. 13

Four (6.9%) of the 58 mothers of the infertile patients were doing professional work; 7(12.1%) were skilled labourers; 12(20.7%) were unskilled labourers; and 35(60.3%) were unemployed.

Fig. 13 <u>Mothers of infertile female patients who</u> <u>attended a General Practice in Katlehong</u> <u>during a study in 1985 according to</u> <u>occupation: Numbers and percent (%)</u>


Unskilled
12(20.7)

Skilled
7(12.1)

Professional
4(6.9)

Unemployed
35(60.3)

7.6.2 The fertile group

(a) Educational status of the fertile patients:

Table 6

Fig. 14

Of the 85 fertile patients 2(2.4%) were illiterate; 35(41.1%) had primary school education; 33(38.8%) had secondary school education; and 15(17.7%) had gone up to and above matriculation.

Fig. 14 Fertile female patients who attended a General Practice in Katlehong during a study in 1985 according to education: Numbers and percent (%)

EDUCATION OF PATIENTS
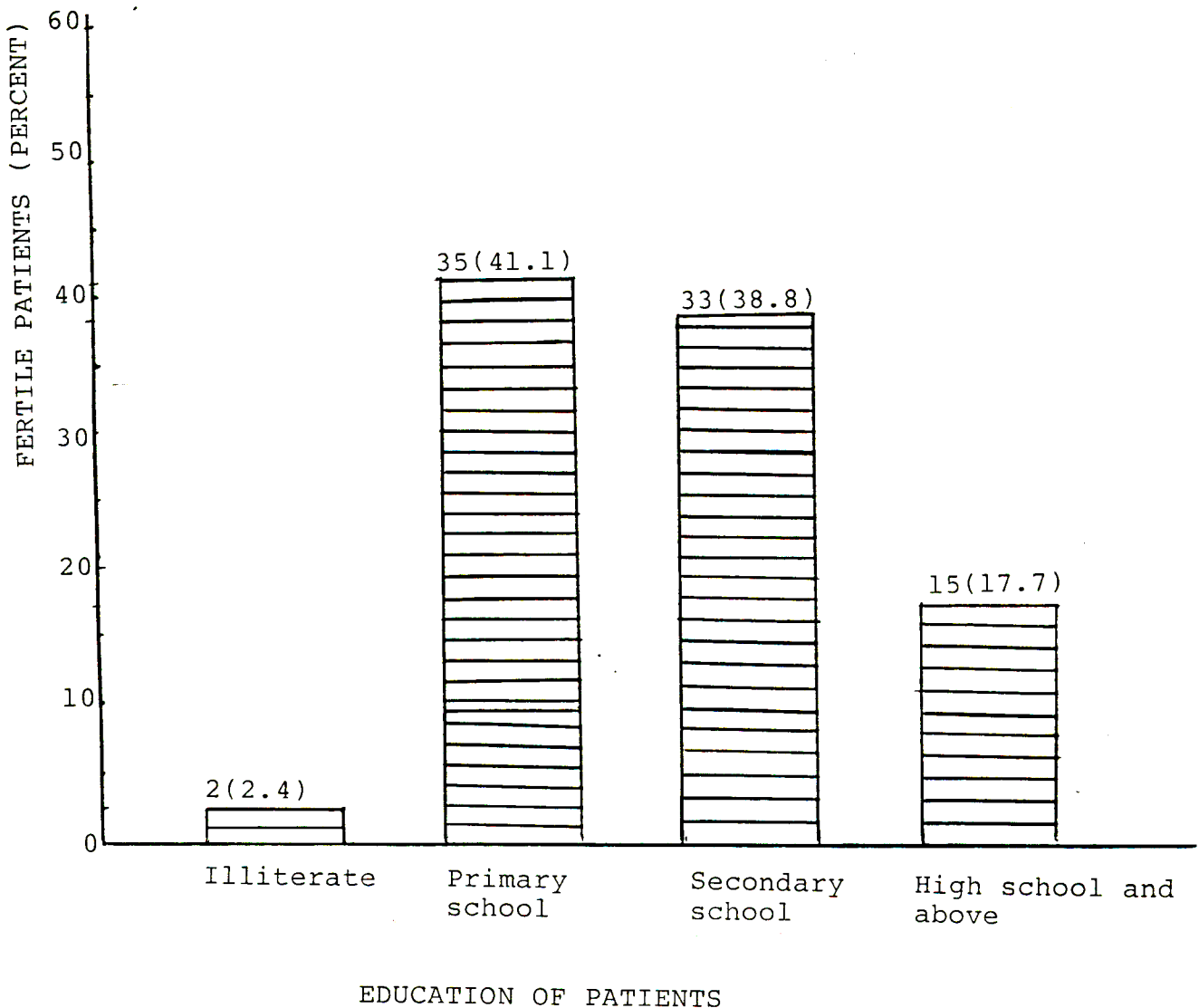
(b) Occupation of the fertile patients:

Table 8

Fig. 15

Four (4.7%) of the 85 fertile patients were doing professional work; 27(31.8%) were skilled labourers; 30(35.3%) were doing unskilled work; and 24(28.2%) were unemployed.

Fig. 15 Fertile female patients who attended a General Practice in Katlehong during a study in 1985 according to occupation: Numbers and percent (%)
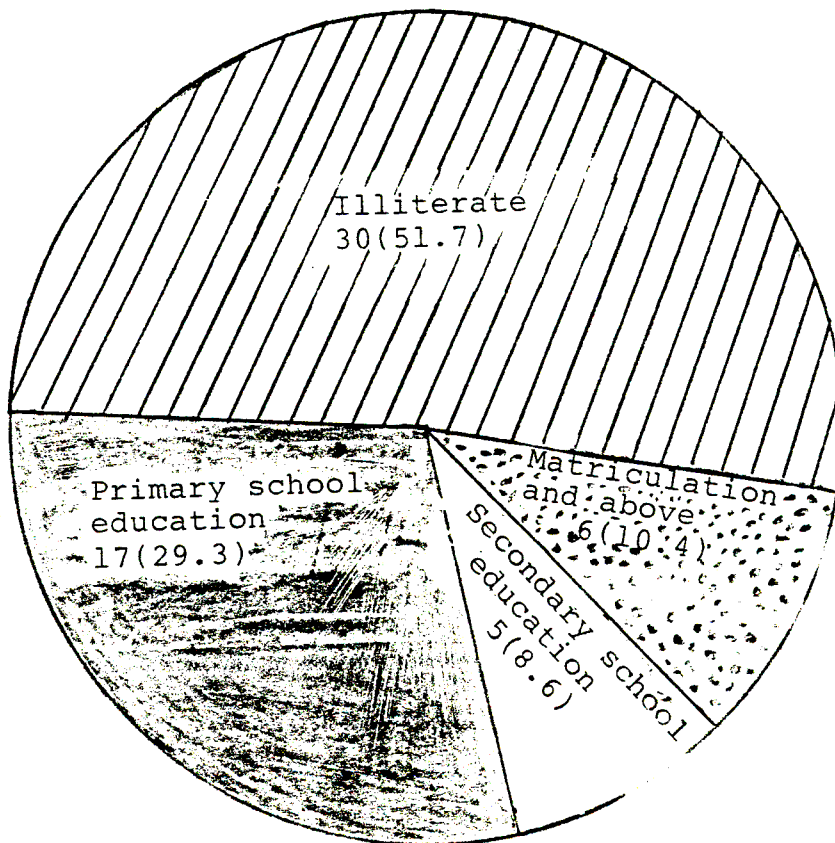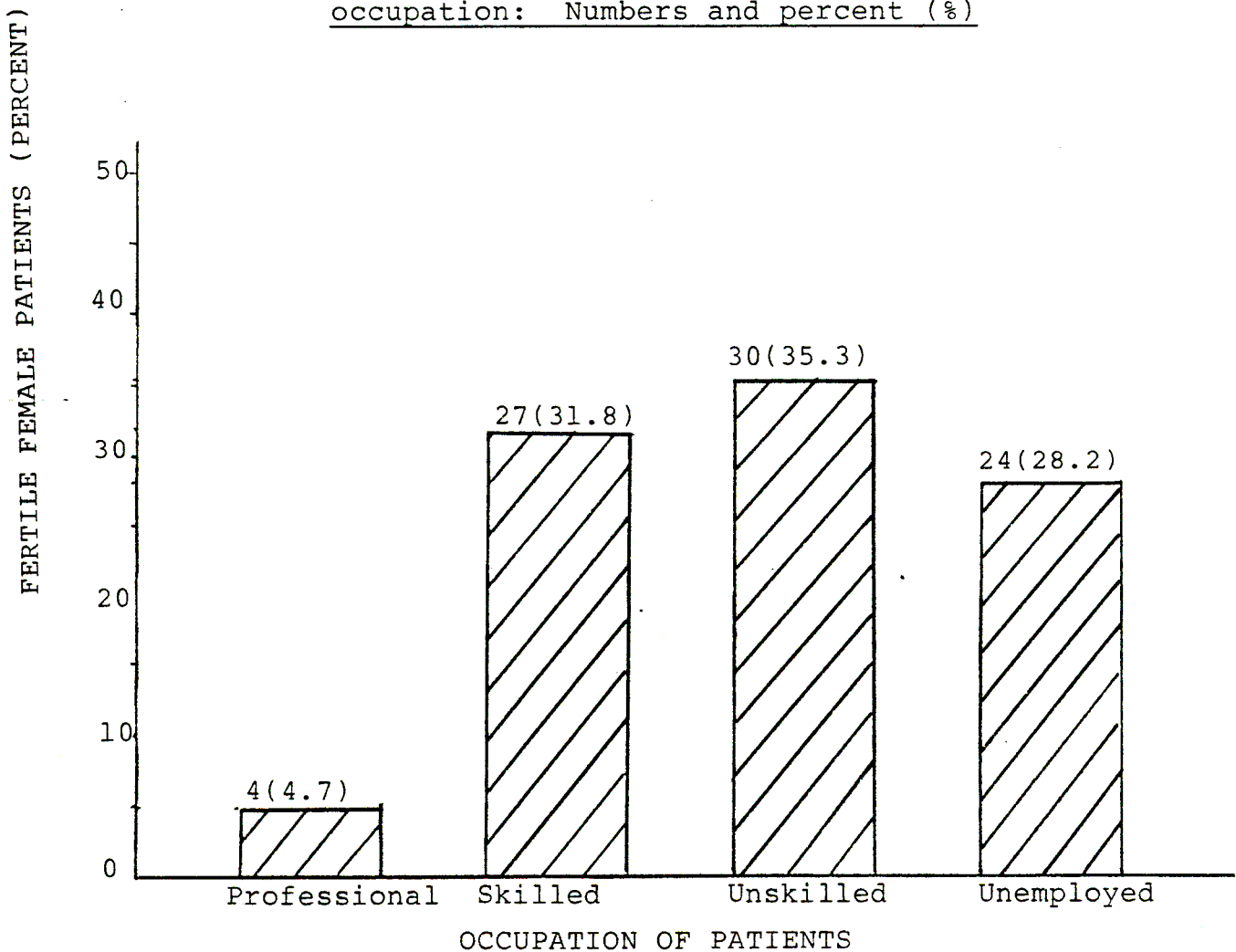
(c) Educational levels of the mothers of the
fertile patients

Table 7

Fig. 16

Of the 85 mothers of the fertile patients
29(34.1%) were illiterate; 37(43.5%) had
primary school education; 8(9.4%) had
secondary school education; and 11(13.0%)
had gone up to and above matriculation.

Fig. 16 Mothers of the fertile female patients who attended
a General Practice in Katlehong during a study in
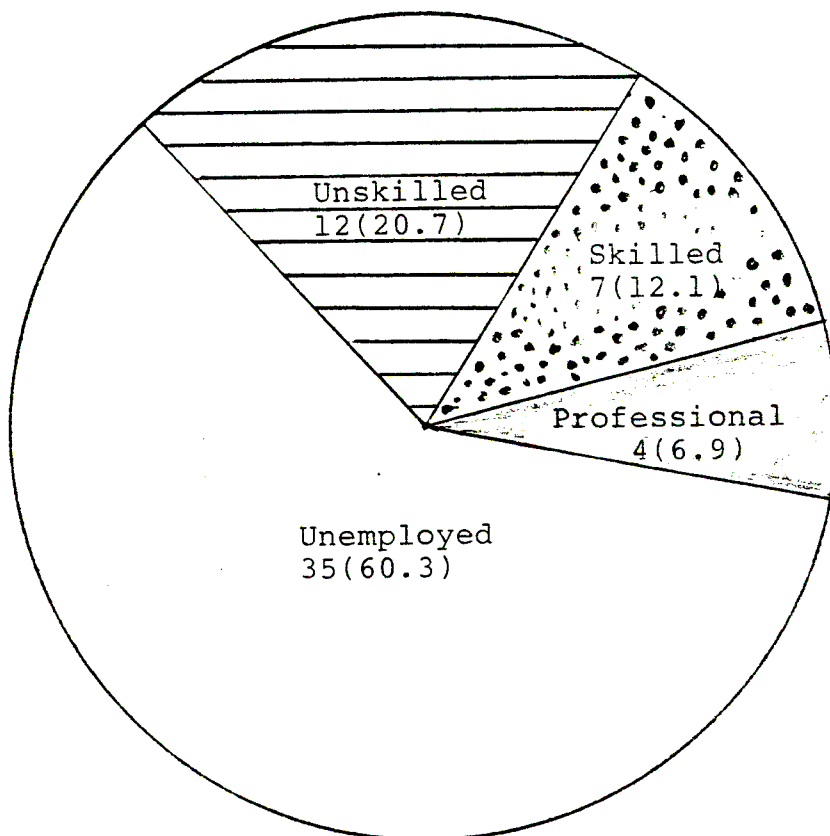1985 according to education: Numbers and percent (%)
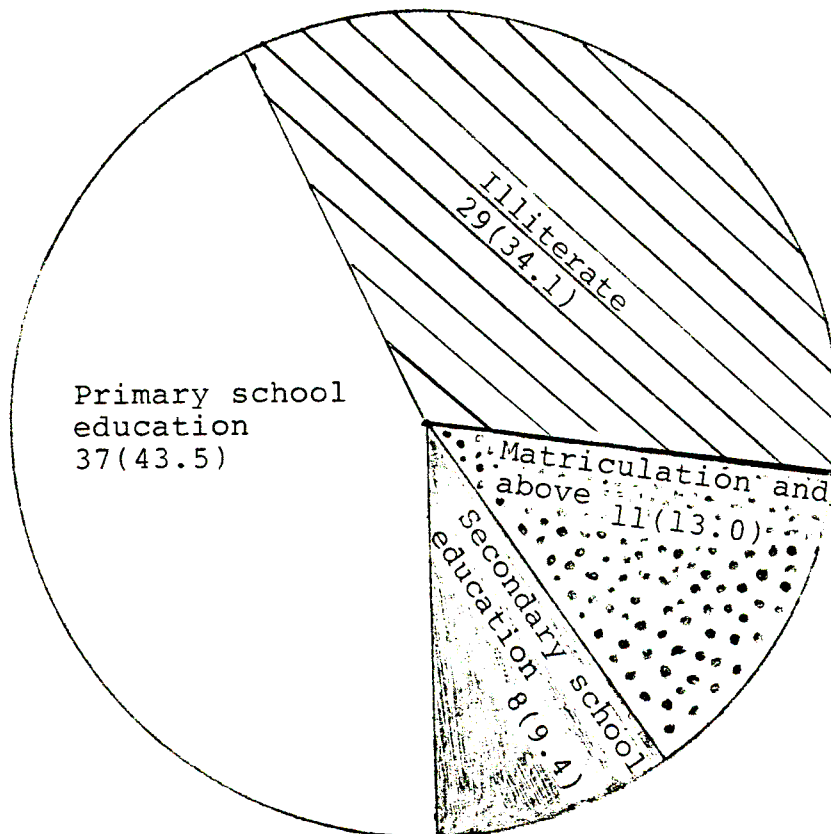
(c) Occupation of the mothers of the fertile

patients: Table 9

Fig. 17

Seven (8.2%) of the 85 mothers of the fertile

patients were doing professional work; 16(18.8%)

were doing skilled work; 23(27.1%) were

unskilled labourers; and 39(45.9%) were

unemployed.

Fig. 17 Mothers of the fertile female patients who
attended a General Practice in Katlehong during
a study in 1985 according to occupation:
Numbers and percent (%)

7.7 <u>Fertility and Gynaecological Problems</u>: Table 10

Some patients would have more than one gynaecological problem and others would have no problem. Thus the 58 infertile patients had a total of 64 gynaecological problems and the 85 fertile patients had a total of 56 gynaecological problems. Of all the patients interviewed, none was found to have a malignancy.

7.7.1 **The infertile patients:** Fig. 18

The 64 gynaecological problems in this group were constituted as follows:

Six (9.4%) patients had fibroid uteri; 7(10.9%) had fixed retroverted uteri; 7(10.9%) were pregnant; 32(50.0%) had a past history of severe lower abdominal pains; and 12(18.8%) had a past history of abortions.

Fig. 18 **Infertile female patients who attended a General Practice in Katlehong during a study in 1985 according to gynaecological problems:** Numbers and percent (%)
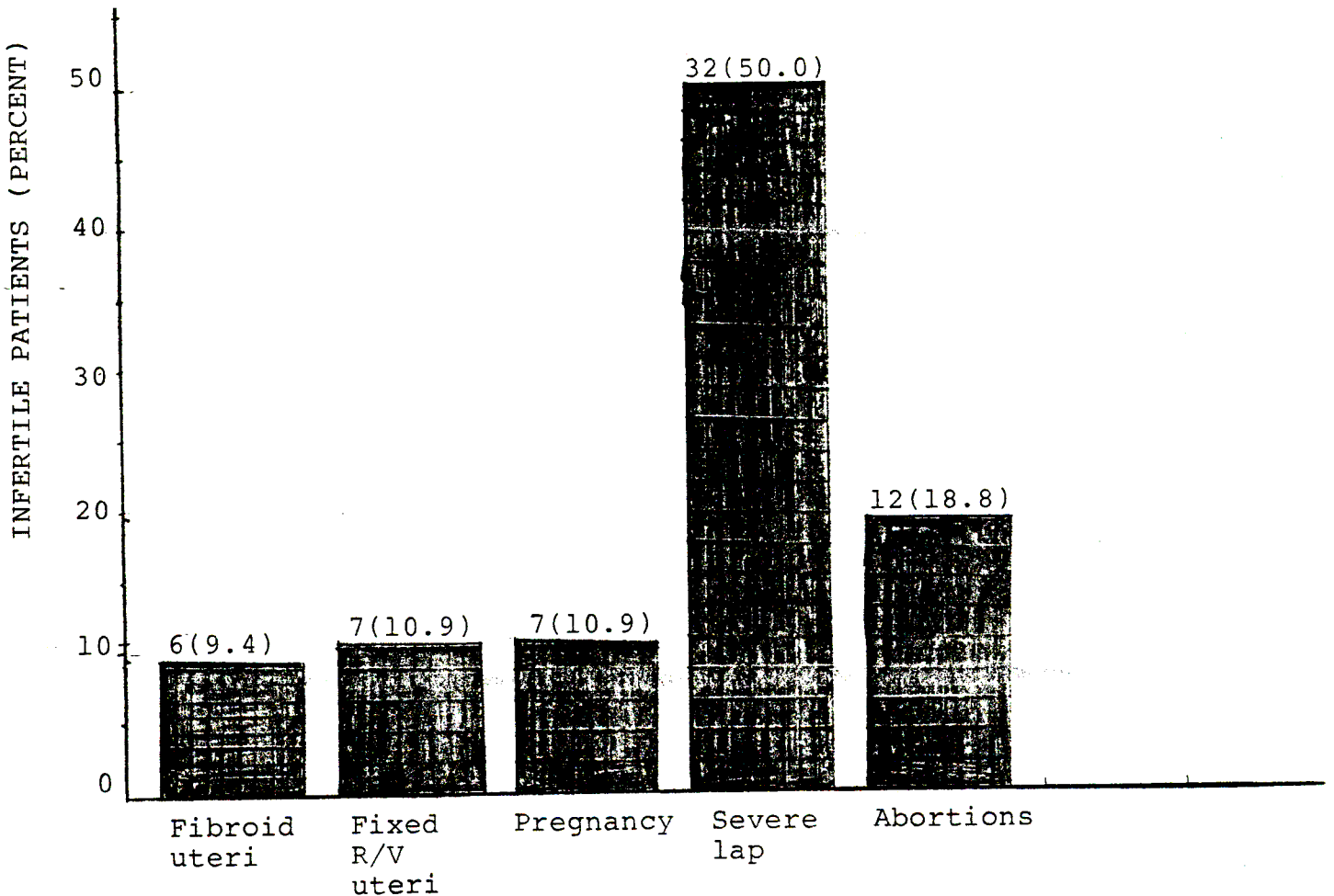

GYNAECOLOGICAL PROBLEMS OF PATIENTS

7.7.2 The fertile patients: Fig. 19

In this group of patients the 56 gynaecological problems were constituted as follows:

Two (3.6%) patients had fibroid uteri; 3(5.3%) had fixed retroverted uteri; 14(25.0%) were pregnant; 21(37.5%) had a past history of severe abdominal pains; and 16(28.6%) had a past history of abortions.

Fig. 19 Fertile female paatients who attended a General Practice in Katlehong during a study in 1985 according to gynaecological problems: Numbers and percent (%)
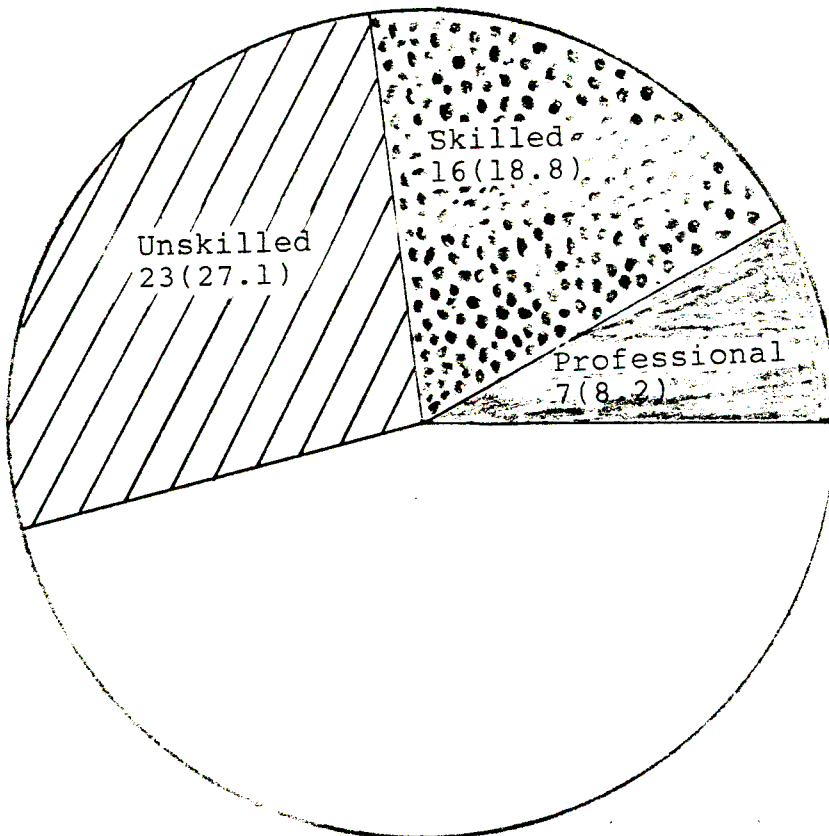

GYNAECOLOGICAL PROBLEMS OF PATIENTS
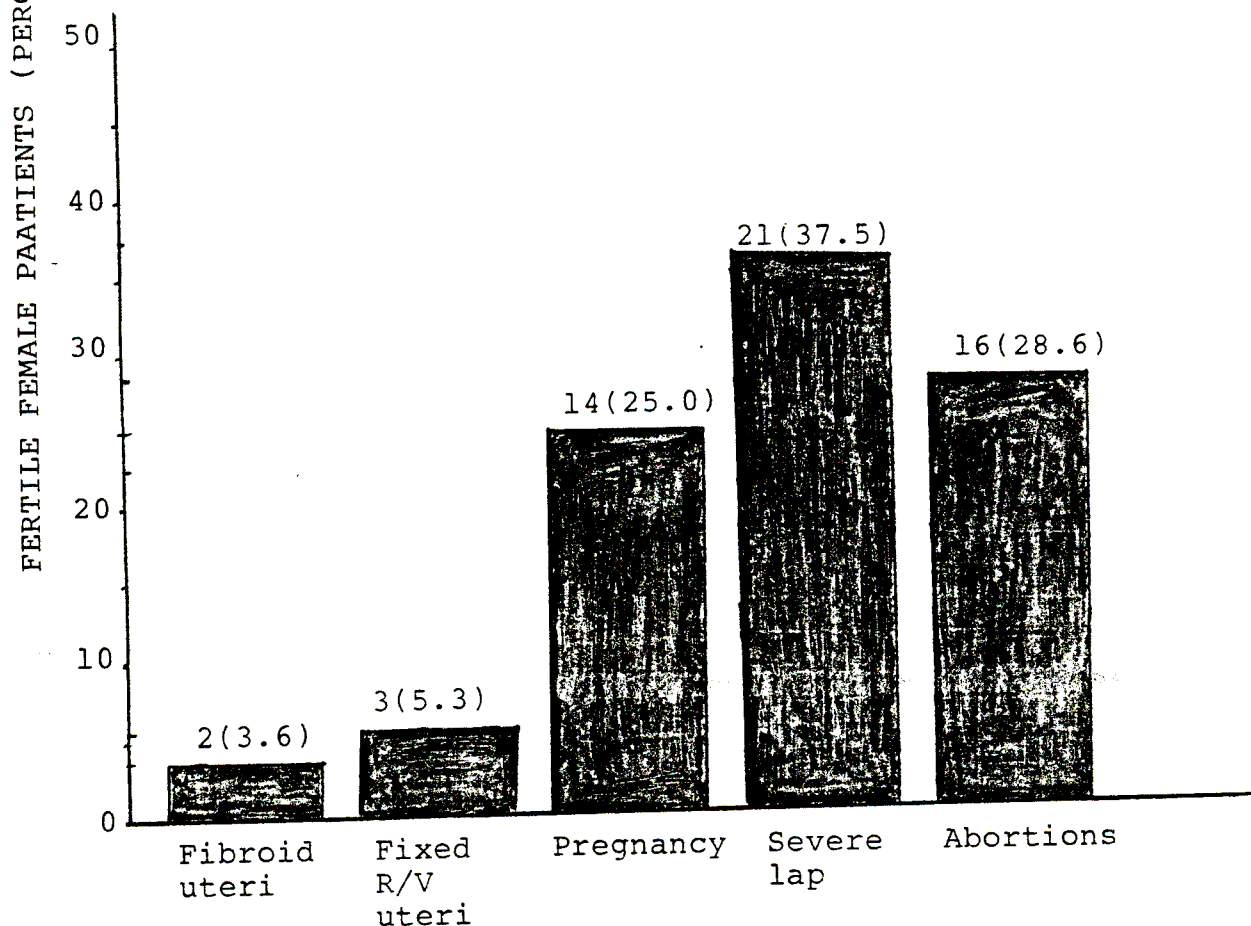
8. DISCUSSION

8.1 Prevalence

A total of 143 female patients ranging in age from 20
to 40 years were interviewed in this study. Out of
this figure 58 patients (40.6%) were found to be
suffering from infertility.

Though the above figures suggest a high prevalence of
infertility in the Katlehong community, it is difficult
to accept them as being representative because they are
siphoned off a patient population attending just one
out of the many general practices in this community.
The other problem experienced in urban Black communities
is the fact that these communities are made up of different
tribes from the many Black homelands throughout South
Africa. Because of several reasons, mainly socio-economic,
including health, people tend to migrate from these
homelands into the urban areas. Thus the population
in these latter areas is hardly ever constant and this
may be partly responsible for the apparent high prevalence
of infertility in Katlehong.

Again there may be a general unfounded belief in the
community that the investigator handles infertility
cases successfully or is sympathetic towards patients
with infertility. This latter fact can also inflate
the true prevalence of infertility in the community.

It is considered that the above facts could account
for the high prevalence of infertility in the Researcher's
Practice.

Only 7(4.8%) of the 143 patients interviewed presented
with infertility as a presenting complaint. This is
12.1% of the 58 infertile patients. Thus 51(87.9%) of
all the 58 infertile patients had presented with other
medical problems but were found to be infertile during
the interview. Slabbert et al, report that about 10%
of all couples consult their doctors with infertility
as their presenting complaint.[6]

As stated earlier infertile female patients are generally
miserable and dejected. They feel they are lesser females
than their fertile counterparts whatever the cause of
their infertility. It is not surprising therefore that
the majority of these patients will prefer to talk about
all the other medical problems rather than expose their
barrenness when confronted with medical advisors. This
could explain why so few, as seen above, of these
infertile patients present directly with infertility to
their doctors.

A high index of suspicion is thus necessary in the
diagnosis of infertility because couples afflicted with
this problem can be managed with success in 50-60% of
the cases.[7]

8.2 <u>Age</u>

In this study infertility was found to be more prevalent in the older group than in the younger age group - 31.0% in the 31-35 years age group as opposed to 13.8% in the age range 21-25 years.

Most of the patients interviewed in this study were in the age group 26-30 years - 22(38.0%) in the 58 infertile group, and 29(34.1%) in the 85 fertile group. This finding illustrates the fact that most female patients in this age group have formed stable relationships with their male partners. Consequently the majority of the fertile and the infertile patients were in this age group.

Generally as stated above fertility tends to decline with the advancing age of the female patients. Emmet and Lamb found that infertile females who were under 25 years of age at the time of registration at the infertility clinic, subsequently conceived at a higher rate and those over 35 years of age at a lower rate than those between 25 and 35 years of age.[8]

There were more fertile patients (23.5%) than there were infertile patients (13.8%) in the 21-25 years of age range. In the 36-40 year age range there were more infertile patients (17.2%9 than there were fertile patients (13.0%). This again points to the fact that

fertility is inversely proportional to the age of a
female patient.

8.3 Marital Status

The study reveals that 27.5% of the infertile patients
and 15.3% of the fertile patients were not legally married
to their male partners. Thus more of the infertile patients
than the fertile ones were just living together with their
male partners - there was no formal marriage between them.

It is difficult to explain right away why or how the above
state of affairs comes to be. Perhaps the couples prefer
to live together first and only go on to get married
after they have had children; thus obviating the problem
of infertility in later married life.

None of the infertile patients were divorced whereas
5.9% of the fertile group were. Maybe the infertile
patients where applicable found it loathsome and
embarrassing to admit they were divorced because of
their failure to conceive. It could also be that all
the infertile patients interviewed had, together with
their spouses, accepted their infertility problem which
thus posed no threat to their married life.

It was found in England and Wales that of the large
number of divorced couples two thirds either had no
children, or had only one child.[9] Here it could be that

infertility constituted the grounds for divorce in these couples. It can also be argued that possibly they divorced in their earlier years of marriage, before they got children, or they simply refrained from having children owing to unstable marriages.

The majority of all the female patients interviewed were married - 69.0% of the infertile group, and 77.6% of the fertile patients. A formal legal marriage it would seem does to some extend affect favourably the fertility of a female partner.

Infertile couples however may separate or divorce on the basis of the infertility of the female.

8.4 Parity

Nineteen percent of the infertile patients were suffering from primary infertility. Possibly these patients did not seek proper medical attention in cases where they suffered from lower abdominal pains (Pelvic inflamatory disease). This condition, if untreated or inadequately treated often leads to infertility via tubal obstruction. It could also be possible that these patients were suffering from unovulatory cycles. These patients may also have been having infertile male partners.

The average parity of the infertile group was 1.8 per patient and that of the fertile group was 3.1 per patient.

In a study done in the Cape on Black fertility patterns
it was found that the average number of children desired
per family was four.[10] It was also found that this
figure was more in rural areas and less in urban areas.[11]
Thus it would seem that patients generally wish to have
more than 3 children each, and this could possibly
explain why infertile patients in this study preferred
to have more children despite their reasonable parities
- 24.1% had 2; 13.8% had 3; and 12.1% had 4 children
each.

Perinatal and paediatric deaths could be another reason
for patients to wish for more children. In this study
the infertile patients had more paediatric deaths (18.6%)
than the fertile group (8.9%). In the Cape study
referred to above, women who had lost children or had
miscarriages were often averse to contraceptives.[12]

Friends with higher parities could also be a source
of inspiration to female patients' aspirations for more
children. Patients may also be wishing to emulate their
own mothers in cases where the latter have higher
parities.   Also, patients remarrying may wish to
have more children with their new partners.

8.5 Contraception

In this study it was found that 60.3% of the infertile
patients had never ever used any form of contraception

in their lives. The corresponding figure in the
fertile group was 7.1%.

The 60.3% figure in respect of the infertile patients
is incredibly high. Perhaps some of these patients
did in fact use some form of contraception in the past.
It could be that during the interview they simply
did not wish to incriminate themselves in cases where
they believed the use of contraception could be
responsible for their infertility.

Anovulation could also be another contributing factor
to this high figure, since about 10% of all female
infertility cases is due to ovulation failure.[13]
Perhaps the use of hormonal contraceptives does
stimulate ovulation in women with anovulatory cycles
when these contraceptives are discontinued. Adrian K
et al, observed that anovulation was the causative
factor in half of the 291 infertile couples with
Clomiphene or cycle hormone therapy and readily
achieved conception in the majority of these patients.[14]

Of those patients in the infertility group who had used
some form of contraception in the past the majority
11(19.0%) out of the 58 infertile patients, had used
the intra-uterine contraceptive device method. These
patients stated emphatically that the devices were
removed 2 or more years prior to the interview. Thus
special investigations to establish whether the devices

were still in situ were not carried out. The strings
that protrude through the cervix in this method
fascilitate ascending pelvic inflammatory diseases
which if not treated lead to fibroids in the pelvis,
which in turn leads to tubal obstruction with subsequent
infertility.

While the intra-uterine contraceptive device method
enjoyed widespread popularity for some years after it
was introduced, current teaching is that it is to be
discouraged in patients with low parities and it is
almost obsolutely contra-indicated in nulliparous women.
Adrian K. et al, also found that women who had used
intra-uterine contraceptive devices in the past not
infrequently suffered from infertility after
discontinuing this method.[15]

It is important to note in this study that 6.9% of the
infertile patients and 27.0% of the fertile group had
used oral contraceptives in the past. The use of oral
contraceptives is often associated with an excellent
return of fertility following discontinuation of the
method. In a study done in Thailand to determine the
return of fertility following discontinuation of oral
contraceptives, it was found that most women (94.3%)
became pregnant within 2 year of stopping the pill.[16]
The study however doesn't give the percentage of women
who became pregnant while not using contraceptives and
desiring conception.

Two patients (Table 5) in the infertile group had been sterilised. Careful consideration of this method of contraception is extremely necessary before it is carried out on patients because once carried out reversal is almost a Sisyphean task.

Walter and Tivers found that female patients requesting reversal of sterilization were younger at the time of sterilization, began and completed their families at an earlier age, and were of lower socio-economic status than those who did not request reversal of sterilisation.[17]

A team from the University of Tubingen stresses the importance of a full investigation of the marital situation with counselling of both partners where possible before deciding on a sterilization procedure. Any social and financial difficulties should also be discussed. They also advise against sterilization either during pregnancy or in the puerperium because of the emotional lability of the women at these times.[18]

8.6 Socio-Economic Status

Nine (15.5%) of the infertile patients as opposed 2.4% of the fertile group were illiterate; 25.9% of the infertile as opposed to 38.8% of the fertile had secondary school education; and 8.6% of the infertile as opposed to 17.7% of the fertile patients had matriculation and above. The above figures demonstrate

an association between the fertility of female patients
and their educational levels. Thus female patients with
higher educational levels are more likely to be fertile
and those with lower educational levels are more likely
to be infertile.

The infertile patients because of their lower educational
levels could be using traditional methods, which are
largely ineffective, to treat conditions like pelvic
inflamatory disease. This together with poor personal
hygiene and delays in seeking proper medical advice
in the event of illhealth, could contribute to the high
incidence of infertility in this group. These patients
also tend to have high rates of paediatric deaths
because of their tendency to treat childhood diseases
traditionally, e.g. gastro-enteritis of infancy with
enemas, and their failure to take advantage of
vaccination facilities at clinics and hospitals. Dott
and Fort found that there was an increased mortality
rate for babies born to less educated, poor and single
mothers.[19]

Mothers are generally close to and quite indispensable
in the psychosexual upbringing of their daughters.
Their educational levels are important in this regard
because these determine the kind of knowledge they
impart to their daughters. If their educational levels
are low as is the case with mothers of the infertile
patients in this study (fig. 12), then the kind of

knowledge imparted to the daughters is expected to be poor, e.g. the use of traditional methods, in treating diseases like Tuberculosis, Measles, pelvic inflammatory diseases and gastro-enteritis of infancy - with hospitals being used only as a last resort, by which time disease processes are advanced. Hence the high rate of infertility amongst the daughters of this group of mothers.

The majority (60.3%) of the mothers of infertile parents were unemployed, whereas 45.9% of the mothers of the fertile patients were unemployed. These mothers are often left at home with their grand-children while the latter's mothers are off to work. As seen earlier these children can be at risk of being mismanaged by their grandmothers should they fall ill - especially if the grand-mothers have low educational levels. This could account for the high figure (18.6%) of paediatric deaths in the infertile group and the low figure (8.9%) of paediatric deaths in the fertile group of patients.

Most of the infertile patients (60.3%) were unemployed as opposed to 28.2% of the fertile group. As seen earlier some of the infertile patients had parities of up to 3 and 4 but they still wanted to have more children. Perhaps unemployment is one of the factors which lead to them aspiring for more children. In order for women to find an alternative role to child-bearing education and job opportunities must be available to young women.[20]

Factors influencing fertility are income, education, urbanisation and work opportunities for women. Religious and ethnic groupings are less important. Conditions must be created so that the family can live together where there is employment for the breadwinner. This will reduce the loss of children and therefore desire for a large family.[21,22]

8.7 Gynaecological Problems

The findings on physical examination of the patients interviewed included the followng: fibroid uteri, retroverted fixed uteri, and pregnancy states. None was found to have a malignancy - PAP smears were not done because results would not be available immediately and secondly since the study was carried out in a private general practice, most patients would not afford the cost of the test. The findings in the history of the patients included a past history of attacks of severe lower abdominal pains and a past history of abortions.

Thirty two (50.0%) of the infertile patients had a history of severe lower abdominal pains in the past, whereas 37.5% of the fertile group had a similar history. Seven (10.9%) of the infertile patients as opposed to 5.3% of the fertile group were found to have fixed retroverted uteri on physical examiantion.

The lower abdominal pains history is suggestive of
attacks of severe pelvic inflammatory diseases that the
patients have had in the past. This disease is a
complication of sexually transmitted diseases notably
Gonorrhoea. If untreated or inadequately treated, this
disease leads to infertility by causing different degrees
of fibrosis with tubal obstruction and peritubal adhesions
which account for 30-40% of cases of infertility.[23]
Several subclinical attacks of the same disease can
lead to the same eventuality.

When pelvic inflammatory disease heals by fibrosis
adhesions which form possibly tie down the uterus
thus fixing it in retroversion - hence the association
of this uterine position with infertility. Adequate
early treatment of pelvic inflammatory disease usually
leads to complete resolution with no residual fibrosis.
If however treatment is inadequate, complete resolution
is not achieved and some residual fibrosis results in
the pelvis and with subsequent similar attacks infertility
results. This could be the case in the infertile patients
in this study because many of these patients were
afflicted by this disease in the past.

The other conditions which can also cause lower
abdominal pains are cystitis, which does not lead to
infertility, and endometriosis which can be a cause
of infertility.

Fibroid uteri were also found to be associated with infertility in that 9.4% of the infertile patients as opposed to 3.6% of the fertile group were found to have fibroid uteri. In this condition myomas (usually multiple) form in the uterine muscular wall and can grow up to huge sizes. They cause infertility by obliterating the uterine cavity and/or the myometrial portions of the Fallopian tubes.

It is important to note that 10.9% of the fertile patients were found to be pregnant. It is thus necessary to exclude a possible preganancy when managing patients with infertility. It would also seem that if a woman desiring conception fails to conceive within 2 years it does not necessarily mean that she is infertile as conception is still possible even after 2 years of trying to conceive.

9. CONCLUSIONS

From this study the following conclusions are made.

9.1 An advanced age of females (above 30 years), a relationship between partners not based on a formal legal marriage, and a low parity are factors found to be associated with female inertiltiy.

9.2 A poor socio-economic status as indicated by little education and unemployment of female patients and their mothers, and a high rate of paediatric deaths have also been found to be associated with infertility.

9.3 Women who have used the intra-uterine contraceptive device method in the past tend to suffer from infertility after they have discontinued the method.

9.4 A poor selection of female patients for sterilization leads to many of these women later coming back for reversal of sterilization.

9.5 A finding of a past history of attacks of pelvic inflammatory diseases in female patients and of fibroid uteri and/or fixed retroverted uteri on physicl examination of the patients have also been found to be associated with infertility.

10. RECOMMENDATIONS

From the above study the following recommendations, which are aimed at reducing the occurence of factors associated with female infertility in the Katlehong community, are drawn:

10.1 A formal legal marriage should be recommended to female patients who would like to start up families.

10.2 Female patients wishing to have children should be advised to have all their children by the age of 35 years at the latest.

10.3 Hormonal methods of contraception, oral contraceptive combined pills in particupar, should be recommended, unless in some way contra-indicated, to patients wishing to practice contraception.

Intra-uterine contraceptive devices should be discouraged in nulliparous women and in women with low parities.

Selection of female patients for sterilization should be meticulous. It should be ascertained that these patients are mature, they have completed their families, they understand the implications and risks involved, the male partners also understand the situation fully, and their financial and social circumstances are fully considered before carrying out the procedures.

10.4 The socio-economic standing of patients should be improved in every way possible and whenever possible. Emphasis should be laid on education especially but also on employment. This however is a problem of national magnitude and can in no way be handled adequately by the medical fraternity alone.

The community can however be urged to utilize the available facilities, e.g. health care centres, clinics and hospitals, to full advantage. Patients should also be taught constantly about personal hygiene, early recognition of sexually transmitted diseases and what to do should these diseases afflict them.

These simple practical measures can, if properly carried out, make a substantial contribution to reducing the high prevalence of pelvic inflammatory disease, of paediatric deaths, and of female infertility.

11. ACKNOWLEDGEMENTS

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13. ANNEXURES

13.1 TABLES

Table 1: Female patients who attended a General Practice in Katlehong during a study in 1985 according to fertility: Numbers and percent (%)

Infertile	58(40.6)
Fertile	85(59.4)
Total	143(100)

Table 2: Fertility according to age of female patients who attended a General Practice in Katlehong during the study period in 1985: Numbers and percent (%)

Age in years	Infertile patients	Fertile patients	Total
16 - 20	0(0.0)	0(0.0)	0(0.0)
21 - 25	8(13.8)	20(23.5)	28(19.6)
26 - 30	22(38.0)	29(34.1)	51(35.7)
31 - 35	18(31.0)	25(29.4)	43(30.0)
36 - 40	10(17.2)	11(13.0)	21(14.7)
TOTAL	58(100)	85(100)	143(100)

Table 3:   Fertility according to marital status of female patients who attended a General Practice in Katlehong in 1986:   Numbers and percent (%).

Marital status	Infertile patients	Fertile patients	Total
Single	16(27.5)	13(15.3)	29(20.3)
Married	40(69.0)	66(77.6)	106(74.1)
Divorced	0(0.0)	5(5.9)	5(3.5)
Widowed	2(3.5)	1(1.2)	3(2.1)
TOTAL	58(100)	85(100)	143(100)

Table 4:   Parity of female patients who attended a General Practice in Katlehong during a study in 1985 according to level of fertility: Numbers and percent (%).

Parity	Infertile patients	Fertile patients	Total
Never conceived	11(19.0)	0(0.0)	11(7.7)
1 child	17(29.3)	6(7.1)	23(16.1)
2 children	14(24.1)	29(34.1)	43(30.0)
3 children	8(13.8)	24(28.2)	32(22.4)
4 children	7(12.1)	12(14.1)	19(13.3)
5 children & over	1(1.7)	14(16.5)	15(10.5)
TOTAL	58(100)	85(100)	143(100)

Table 5: Contraceptive methods used in the past by female patients who attended a General Practice in Katlehong during a study in 1985 according to fertility: Numbers and percent (%)

Contraception method	Infertile patients	Fertile patients	Total
Never	35(60.3)	6(7.1)	41(28.7)
Nil	1(1.7)	12(14.1)	13(9.1)
IUCD	11(19.0)	31(36.5)	42(29.3)
Depo Provera	7(12.1)	13(15.3)	20(14.0)
Oral contraceptives	4(6.9)	23(27.0)	27(18.9)
Sterilized	2(see text)	0(0.0)	2(see text)
TOTAL	58(100)	85(100)	143(100)

Table 6: Educational levels of female patients who attended a General Practice in Katlehong during a study in 1985 according to fertility: Numbers and Percent (%)

Educational level	Infertile patients	Fertile patients	Total
Illiterate	9(15.5)	2(2.4)	11(7.7)
Primary school	29(50.0)	35(41.1)	64(44.7)
Secondary school	15(25.9)	33(38.8)	48(33.6)
Matric and above	5(8.6)	15(17.7)	20(14.0)
TOTAL	58(100)	85(100)	143(100)

Table 7: Educational level of mothers of female patients
who attended a General Practice in Katlehong
in 1985 according to fertility of patients:
Numbers and percent (%)

Educational level	Mothers of Infertile patients	Mothers of Fertile patients	Total
Illiterate	30(51.7)	29(34.1)	59(41.2)
Primary school	17(29.3)	37(43.5)	54(37.8)
Secondary school	5(8.6)	8(9.4)	13(9.1)
Matric and above	6(10.3)	11(12.9)	17(11.9)
TOTAL	58(99.9)	85(99.9)	143(100)

Table 8: Occupation of female patients who attended a
General Practice in Katlehong during a study
in 1985 according to fertility: Numbers and
percent (%)

Occupation	Infertile patients	Fertile patients	Total
Professional	3(5.2)	4(4.7)	7(4.9)
Skilled	9(15.5)	27(31.8)	36(25.1)
Unskilled	11(19.0)	30(35.3)	41(28.7)
Unemployed	35(60.3)	24(28.2)	59(41.3)
TOTAL	58(100)	85(100)	143(100)

Table 9: Occupation of mothers of female patients who attended a General Practice in Katlehong during a study in 1985 according to fertility of patients: Numbers and percent (%)

Occupation	Mothers of infertile patients	Mothers of fertile patients	Total
Professional	4(6.9)	7(8.2)	11(7.7)
Skilled	7(12.1)	16(18.8)	23(16.0)
Unskileld	12(20.7)	23(27.1)	35(24.5)
Unemployed	35(60.3)	39(45.9)	74(51.8)
TOTAL	58(100)	85(100)	143(100)

Table 10: Gynaecological problems of female patients who attended a General Practice in Katlehong during a study in 1985 according to fertility: Numbers and percent (%)

Gynaecological problems	Infertile patients	Fertile patients	Total
Fibroid uteri	6(9.4)	2(3.6)	8(6.7)
Fixed R/V uteri	7(10.9)	3(5.3)	10(8.3)
Pregnancy	7(10.9)	14(25.0)	21(17.5)
Severe LAP in the past	32(50.0)	21(37.5)	53(44.2)
Abortions in the past	12(18.8)	16(28.6)	28(23.3)
TOTAL	64(100)	56(100)	120(100)

13.2 <u>PROTOCOL</u>

<u>THE PREVALENCE OF INFERTILITY IN WOMEN ATTENDING A GENERAL
PRACTICE IN KATLEHONG</u>

1. <u>PROBLEM</u>

Infertility, with its serious sequelae like divorce, is
one of the commonest problems encountered in general
practice in the Katlehong Black Township near Germiston.

2. <u>OBJECTIVES</u>:

2.1 To determine the prevalence of infertility in relation
to:

(a) age of patients

(b) marital status of patients

(c) parity of patients

(d) contraceptive methods used in the past by patients

(e) socio-economic status of patients

(f) gynaecological problems of patients.

2.2 To determine those factors which occur more frequently

amongst patients with infertility than amongst those patients who do not have this problem.

2.3 To determine hypothesis regarding factors which appear to have an association with infertility.

2.4 To recommend measures directed to reducing the occurence of factors associated with infertility.

3. COLLECTION OF DATA

3.1 Definition of Criteria

3.1.1 Infertility: A condition which arises in a woman who fails to conceive, despite her desire to do so, after staying with a man (husband or boy-friend) continuously for two or more years, during which time conception was desired and contraception was not practised.

3.1.2 Patient: Any female person aged 40 years or less who will consult the Researcher's General Practice during the study period, and who will have stayed continuously with her husband or boy-friend for two or more years.

3.1.3 Prevalence: The number of patients suffering from infertility who will have been seen during the study period.

3.1.4 <u>Parity</u>: The number of pregnancies which a
patient will have had and which will have gone
up to and beyond 28 weeks

3.1.5 <u>Contraception</u>: Methods that will be or will
have been used by patients to prevent pregnancy.

3.1.6 <u>Socio-economic status</u>: The social and economic
standing of a patient. This to be determined
from the highest educational levels and occupation
of patients and their parents.

3.1.7 <u>Katlehong</u>: A Black Township near Germiston
town in the Transvaal. It is a typical South
African Black residential area with a population
of approximately 239 000.

3.1.8 <u>Age</u>: The number of completed years of a patient

3.1.9 <u>General Practice</u>: A comprehensive practice
of medicine at diagnostic, therapeutic, preventice
promotive and rehabilitative levels and which
is directed to individual pateints and their
families in terms of the needs of the particular
service.

3.1.10 <u>Personal data of patients</u>: Age, marital status,
educational level, occupation, parity and
contraception methods.

3.2 Selection of Sample and Control Groups

3.2.1 Sample: Each female patient aged 40 years of less who comes to the Researcher's Practice during the study period for any problem, and who has stayed continuously with her husband or boy-friend for two or more years, will be included in the study group.

3.2.2 Control group: For the purposes of this study, a control group is not necessary. However controls internal to the study will be made.

3.3 Method of Data Collection

Data for this prospective study will be collected over a period of seven weeks. The study will be conducted at the Researcher's General Practice which is situated in the Katlehong Townships. A standardized questionnaire and checklist will be used for the collection of data.

Data will be collected from the history of patients and from physical examination of the patients.

3.3.1 Data to be collected from history of patients

All patients qualifying to be in the study will each be asked the following:

(a) age: number of completed years.

(b) marital status: whether married, single,

divorced or widowed. The patients will

also be asekd how long they are living or

have lived with their male partners.

(c) parity: the number of pregnancies that went

up to and beyond 28 weeks. The following

information relating to parity will also

be asked for:

i) number of living children, and

ii) year of last pregnancy.

(d) contraception: methods that will be in

use at the time of the study and methods

that the patients will have used in the past.

Only methods that will have been used for

the longest period of time will be considered

in cases where more than one method will

have been used in the past. In cases where

contraception will have been discontinued,

the year of discontinuation will be recorded.

(e) socio-economic status: this will be determined

from the educational and occupational status

of the patients, and of their parents. In

each case the highest educational level
achieved and the type of occupation - whether
professional, skilled, unskilled or unemployed
- will be recorded.

In the case of parents only the education
and occupation of the mothers will be
considered because generally the mothers
are closer to their daughters than are
fathers.

In cases where the mothers will have died,
their education and occupation before death
will be considered. If the deaths occured
before the daughters reached 15 years of
age, the mothers will be recorded as having
been illiterate and unemployed.

(f) data from gynaecological history: here
     the following information will be asked
     for from each qualifying patient:

     i) Attacks of severe lower abdominal pain
         the patient will have had in the past.
         The pain will be characterized by any
         one of the following:

         - difficulty in walking up-right because
           of pain.

- admission into hospital for pain;

- staying away from work for at least
  5 days because of pain.

Vague abdominal pains will not be
considered.

ii) History of abortions the patients will
have had in the past. Each abortion
will be characterized by:

- termination of pregnancy before 28
  weeks gestation;

- expulsion of foetus and placenta which
  will have been seen by the patient;

- hospitalization of patient with
  subsequent curettage of the uterus.

3.3.2 Data collection from physical examination of
patients

The examination will be gynaecological and the
following will be looked for:

(a) fibroid uteri;

(b) fixed retroverted uteri;

(c) abnormal pelvic masses;

(d) pregnancy states;

(e) gynaecological malignancies.

Paparnicolaou smears will not be done because of the test's prohibitive cost.

A diagnosis of pregnancy will be made on clinical grounds and confirmed with a pregnancy test done on the patient's urine.

3.4 Elimination of Variables

A standardized questionnaire and checklist will be prepared according to the above objectives and criteria and will be adhered to strictly during data collection.

All information will be collected by the author alone and this will obviate the problem of multiple observers.

3.5 Time Barriers:

(a) Final protocol ....31/9/85.

(b) Collection of data ....23/10/85-14/12/85.

(c) Collation and analysis of data to be completed

by   .... 30/4/86.

(d) Submission of report .... 30/9/86.

3.6 Appraisal of Literature

This will be ongoing throughout the study.

4. COLLATION AND ANALYISS OF DATA

Data collected will be collated and analysed manually by
the author - the only investigator.

5. EVALUATION OF THE INTERRELATIONSHIPS OF DATA

Interrelationships of data collected will be evaluated and
their presence or absence will be recorded.

6. ADVANCEMENT OF HYPOTHESES OF THE MULTIPLE FACTORS OF CAUSATION AND METHODS OF INTERCEPTION

Hypotheses based upon the findings of this project will
be advanced and included in the published findings. Methods
to counteract factors associated with infertility will also
be recommended.

7. <u>FIELD TRIALS OF HYPOTHESES</u>

Field trials of the hypotheses advanced will not be carried out owing to time.

8. <u>FINAL DEFINITION OF CAUSATIVE FACTORS DETERMINED AND RECOMMENDATIONS MADE OF METHODS OF INTERVENTION TO CONTROL THE PROBLEM</u>

As no field trials will be undertaken in respect of the advanced hypotheses, causative factors cannot be finally defined.

9. PUBLICATION OF REPORT

* *

13.3.1 Questionnaire / Checklist Coding Sheet

1. <u>DATE</u> - Date on which information is collected.

2. <u>NO OF PATIENT</u> - Number given to each qualifying patient; the first patient is given 1, the second patient 2, the third 3, etc.

3. <u>AGE OF PATIENT</u> - Completed years.

4. <u>MARITAL STATUS</u>

   1 - single

   2 - married

   3 - divorced

   4 - widowed.

   DURATION - in years.

5. <u>SOCIO-ECONOMIC STATUS</u> _

   STD - Highest educational level:

   1 - illiterate

   2 - primary school education

   3 - secondary school education

   4 - high school education (matriculation) and above.

OCCUP - Occupational status

    1 - professional work

    2 - skilled work

    3 - unskilled work

    4 - unemployed.

6.   PARITY:

No.: Number of pregnancies that went up to and beyond 28 weeks.

LIVING: Number of living children.

LAST PREG: Year of last pregnancy.

7.   CONTRACEPTION:

NOW - method in use currently

BEFORE - method used for the longest period of time in the past.

STOPPED - year in which method was stopped.

Contraceptive Methods:

1 - Intra-uterine contraceptive device (IUCD)

2 - Depo provera

3 - Oral contraceptive combined pills

4 - Sterilized

5 - Nil (not using any method)

6 - Never (has never used any form of contraception).

8. <u>HISTORY</u>

SEVERE LAP - Attacks of severe lower abdominal pains in the past - whether <u>yes</u> or <u>no</u>

ABORTIONS: termination of pregnancy before 28 weeks gestation in the past - whether <u>yes</u> or <u>no</u>.

9. <u>GYNAECOLOGICAL EXAMINATION</u>

FIBROID - fibroid uterus

FIXED R/V UT - fixed retroverted uterus

ABN. PELV. MAS. - Abnormal pelvic masses

PREG. - pregnancy state

NEOPL - gynaecological neoplastic disease.

10. <u>DIAGNOSIS</u>

DIAG - diagnosis patient presenting with.

13.3.   QUESTIONNAIRE

13.3.2   Column Format

Date	No. of Patient	Age of Patient	MARITAL STATUS				SOCIO-ECONOMIC STATUS		PARITY			CONTRACEPTION			HISTORY		GYNAECOLOGICAL EXAMINATION				DIAGNOSIS	COMMENTS
			PATIENT			PATIENT	PATIENT	MOTHER	No. Living	Last preg				Severe	Abortions	Fixed R/V uteri	Abn. Pelv. Mas	Preg.	Neopl.	Diag.	
			Now	Duration	Before	Duration	Std Occup	Std Occup	No. Living	Last preg	Now	Before	Stopped	LAP	Abortions	R/V uteri	Abn. Pelv. Mas	Preg.	Neopl.	Diag.	