RESULTS

Demographic Pattern of the Study Sample

A) Distribution of respondents according to primary health care centre and sex : Table (1) shows that the total number of respondents was 1248 individuals, out of whom 595 were males (47.7%) and 653 were females (52.3%). The highest frequency (340) and percentage (27.2%) were resident in the catchment area of "Sultana" primary health care centre.

Respondents resident at Al-Rhoda health centre amounted to 291 individuals (23.3%). The share of Al-Dar Al-Baida was 253 (20.3%) respondents.

Those in Al-Mohamadiah amounted to 181 (14.5%) individuals. 183 (14.8%) respondents were contacted at Al Badiah health centre. The distributions were concordant with the total population registered in each centre.

B) Distribution of respondents according to place of origin within the Kingdom : Table (2) illustrated by fig (5).

The majority (58.7%) of respondents had their origin in the Central area of Saudi Arabia which includes the Capital city of Riyadh and other areas of the Central Province such as Dwadmy, Majmaah, Al-Zolfy, Shagraa and other urban and rural areas of Qaseem.

18.8% came originally from the Eastern Province which includes Dammam, Jubail, Al-Khobar, Al-Hasa, Hafr Al Baten and other urban and rural areas.

9.3% came originally from Al-Higaz Region (West) in which Jeddah, Mekkah Al-Makaramah, Taif, and Al-Madinah are the most well-known cities in that region.

7.4% came originally from Gizan, Najran, Al Baha, and Aseer regions.

3.2% came originally from the Northern area including Hail, Tabuk, Al-Grayat and other North border towns and rural areas.

2.6% had their origin from other countries such as Egypt, Syria, Palestine, Lebanon, Indonesia ... etc. These had been granted the Saudi nationality.

C) Distribution of age, sex and type of marriage of the sample investigated:

Tables (3) and (4) illustrated by fig. (6,7)

Interviewees who had ages less than twenty years of age constituted almost 5% of the total sample.

Interviewees who had ages fifty-five years and more constituted 5.3% of the total sample. The highest frequency i.e. the modal age group was 30 to less than 35 years since 19.3% of interviewees were in that age period.

The average age for the total sample is:

34.94 ± 10.5 years.

The average age for females

35 ± 10.5

The average age for males is

34.78 ± 10.6

The average age for consanguineous marriages is

34.9 ± 11.2

The average age for non-consanguineous marriages is

34.96 ± 10.4

Application of the Student's t-test of significance to the age difference between total males and total females showed that the difference is insignificant at $P > 0.05$.

Also the differences between consanguineous marriages and non-consanguineous marriages is insignificant at $P > 0.05$.

The total number of consanguineous marriages was 560 (44.87%) out of the total respondents.

On the other hand non-consanguineous marriages were recorded in 688 (55.13%) individuals.

D) Level of Education: Tables (5) and (6)

Illiterates constituted 30.13% of the sample investigated.

7.29% had university education.

If those who just read and write are added to the illiterates then the total will be 48.32%.

The majority had primary level education (23.32%) if we exclude illiterates.

Females were more illiterate than males (38.2% and 21.3% respectively).

Upon grouping the respondents according to their level of education, there were significant differences in the rates of C.Ms in the different levels of education ($P =< 0.05$). The more respondents are educated the lower the probability to be married to a relative. This was found to be highly significant ($P =< 0.001$).

The educated respondent has more chance to choose his/her future spouse.

His/her education may affect the volume of knowledge concerning adverse effects of C.M.. Social contact may be more for the educated. (illustrated by Fig 8.)

E) Occupational Distribution: Table (7)

The majority (31.33%) were housewives.

Students amounted to 30.7%, since the development of education has attracted many Saudis even at a later age. Many females started education after marriage and this is an observable phenomenon due to improvements in the socio-economic situation.

5.37% were professionals, whereas labourers constituted 18.35%. This occupational distribution is concordant with the general pattern of occupations of the Kingdom.

F) Marital Distribution : and Temporal trend in rate of consanguineous marraiges. Tables (8) and (9)

96.7% were married individuals.

2.4% were widows, whereas less than 1% were divorced.

On classifying the respondents according to the year and type of marriage (C.M. or Non-C.M.), there was a clear trend in the rate of C.Ms. by time and the difference between those married before 1950 and those married 1980 and thereafter was highly significant ($P < 0.01$).

This finding supports the assumption that the attitudes towards C.Ms. is declining by time and advances in development and education.

Consanguinity Rates

Consanguinity by age of respondents: Table (10)

The respondents were categorized according to type of marriage.

a. Consanguineous marriage (C.M.) as cases

b. Non-consanguineous marriage (N.C.M.) as controls

A little less than half (44.9%) of the respondents were blood - related: 1.7% were double first cousins, and 23.6% were first cousins, and 19.6% were relatives (less than first cousins). On the other hand 55.1% were non-related (non-consanguineous). Furthermore, the data indicated that slightly more younger respondents married their first cousins or relatives than the older ones. For respondents having ages less than twenty years the consanguinity rate rises to 53.3%.

The average inbreeding coefficient (F)

This has been calculated according to the procedure mentioned in "Materials and Methods" pages (38). The estimated average inbreeding coefficient for the present Riyadh sample is 0.0405.

Respondent's Preference for type of marriage. Tables (12,13) and Fig (9):

Respondents who prefer non-consanguineous marriages constituted the majority (45.7%).

Those who favour consanguineous marriages were less, and constituted (42.3%).

10.6% expressed the belief that it does not matter whether the spouse is a relative or non-related.

On the other hand, dichotomus categorization of consanguineous marriages into yes (those who preferred C.M.) and no (those who disfavoured C.M.) it was found that out the 492 respondent who had C.M., 360 (73.17%) preferred C.M.

On the other hand those who disfavoured C.M. were 132 (respondent (26.83%).

Respondents who had non-consanguineous marriages but still preferred to be married to a relative were 168 (27.72%) out of 606 respondents who were married to non-related spouse.

On the other hand, out of respondents who preferred C.M. (528), only 360 (68.2%) had C.M. whereas 168 (31.8%) were married to a non-related spouse.

23.2% had C.Ms. out of the segment of respondents who did not prefer consanguineous marriages.

Application of the X^2 - test (four-fold) has shown that the association between type of marriage and preferences are highly significant at $P < 0.01$ and one degree of freedom.

Reasons for Preference or Non-preference of C.M.

One or more reasons were given for the preference or non-preference of C.Ms. These are shown in Tables (14) and (15). The most frequently - mentioned reason for the preference of C.Ms. is: "a related spouse is more tolerant and has more patience" (40.9%) and for those not preferring, the most frequently mentioned reason is : "greater - chance of malformations" (58.1%).

One of the most important reasons for preference is that "Property Kept in the Family" when 35% of respondents expressed this view.

Only 18.9% thought that consanguineous marriages were more successful than non-consanguineous marriages. If one adds the "relatives need more concern ..." which is the view of 28.2% then the rate of those who respect and defend family ties amount to 63.2% of respondents who preferred C.M.. For respondents who disfavour C.M., it was found that 7% had been advised by their parents not to marry a relative, which is somehow astonishing in a country tightly bound by tribal customs.

51.9% were afraid from provokation of family troubles.

18.1% had the view that Islam does not favour C.M.

Views of respondents concerning future marriage of their children.

Tables (16) and (19): Almost one third: 421 (33.7%) of the 1248 respondents stated that they will encourage their children to get married to a relative.

Those who will not encourage their children to marry a relative amounted to almost one quarter of the respondents: 319 (25.6%).

The segment of respondents who would not interfere and who will give full freedom for their children to make their choice for whom to marry amounted to 465 (37.3%).

Those who could not formulate an opinion amounted to 43 (3.4%) respondents.

In answering the question "Are you going to encourage your children to marry a relative in the future", 286 (68%) of the respondents who said "Yes" were those having a related spouse.

Among those who said "No", 233 (72%) were those having a non-related spouse (Fig 10).

Knowledge of respondents concerning influence of C.Ms. in causation of inherited disorders. Tables (17) and (19): It is clear that 55.7% of respondents believe that C.M. will increase the rate of appearance of inherited disorders in their offsprings.

A minority (less than one percent) believed that C.M. will minimize the appearance of inherited disorders in their offsprings.

Respondents who believe that C.Ms. have no effect on rate of appearance of C.Ms amounted to 23.2%.

If those respondents are investigated concerning their type of marriage it was found that 70.6% had C.Ms. (Fig 11.)

Respondent's evaluation of the adequacy of Public Health Education with respect to adverse effects of consanguineous marriages: Table (18) (Fig 12): The vast majority of respondents (71.7%) declared the fact that public health education concerning C.Ms. and the inherited disorders is almost negligible and no effort is given to this aspect of social life.

On the other hand 20.5% considered that it was enough. This answer may be partially due to the belief of the respondents that such an answer would please the interviewers.

However, there were no significant differences in the responses to this question between the consanguineous and the non-consanguineous spouses (Table 19).

It seems that public health education in the Kingdom has no evident influence on the people's practice concerning consanguineous marriage.

Knowledge of Importance of Premarital Counseling - according to type of marriage: Table (20)

Less than half of the respondents (46.9%) indicated the importance of premarital counseling. Out of these 65.3% had non-sansanguineous marriages

whereas, in C.M. only 34.7% indicated the importance of premarital counseling. The difference between the two was statistically significant. ($P = \langle 0.01$).

The segment of respondents who declared the non-importance of premarital counseling amounted to 42.6%, out of which 57.7% had consanguineous marriages, whereas 42.3% had non-consanguineous marriages.

Knowledge about Islamic Teaching with respect to consanguineous marriages:

Table (21)

Islam discourages C.M. has been admitted by 53% of all respondents, 73% of these had non-consanguineous marriages.

On the other hand 40.3% believed that Islam encourages C.M., out of these 65.2% had consanguineous marriages.

Those with higher level of education had better knowledge about Islamic teachings in this respect. In those having Intermediate/Secondary school education, 114 out of 170 (67.06%) non-consanguineous marriages believed that Islam discourage C.M.

Respondents with university or high education had more belief in the concept that Islam discourage C.M. since (86.2%) of those having non-consanguineous marriages admitted this concept. The educational differences with respect to Islamic teaching are statistically significant, at $P \langle 0.05$.

Type of marriage and the average number of pregnancies/woman with respect to age. Table (22)

The average number of pregnancies per woman for the consanguineous couples were lower than for the non-consanguineous couples [5.95 ± 1.2 and 6.25 ± 1.6 respectively].

The difference between the two averages was found to be statistically insignificant, at $P \rangle 0.05$.

Average Birth Weight (B.W) with respect to parental relationships: Table 23 (A) 286 (43.8%) of the females interviewed (653) were able to recall or produce evidence of the birth weights of their last child. The majority of deliveries in Riyadh are conducted in hospitals where registered data concerning their delivery could be resorted to. The family files kept in primary health care centres during the last ten years contained ample information on babies including their birth weight, other anthropometric measurements as well as any defects (congenital and acquired).

Every effort was done to guarantee that birth weights mentioned were as correct as possible and probability of error has been minimized.

The average birth weights of the last baby of the consanguineous couple was 3080 $\pm$ 517 grams.

The mean average birth weights for last offspring of first cousins was 3075 $\pm$ 511 grams, whereas distant relationship offsprings had average mean birth weights 3090 $\pm$ 528 grams.

The average mean birth weight of last offspring of non-related couples was 3158 $\pm$ 508 grams.

The difference in birth weight of offsprings between related and nonrelated couples was only 78 grams.

The differences in mean birth weights were found insignificant at $P > 0.05$.

The babies were all Saudis and the five centres randomly selected represent fairly all socio-economic strata of Riyadh community.

Percentiles for the Distribution of Birth Weights (grams). Table 23 (B)

The lower quartile for birth weights for the related group was 3010 grams and 3070 grams for the non-related group.

The median for the related and non-related groups was 3078 and 3162 grams respectively.

The upper quartile for related and non-related groups was 3280 and 3560 grams respectively.

At the 2.5 percentile, the birth weight for the consanguineous group was 1715 (less than 2000 grams) whereas in the non-consanguineous, the birth weight just passed the 2000 grams (2035).

The effect of consanguinity on the reproductive wastage in the sample of Riyadh population. Tables 24 (A) (B) Fig. (13,14)

The reproductive wastage rate in the present study is the sum of:

abortions/100 pregnancies

still-births/100 deliveries

and neo-natal deaths/100 live births

The total wastage rate was obtained by relating the sum of abortions, still births and neo-natal deaths to the number of pregnancies. Table 24 (A) presents abortions and still births as classified with respect to the degree of relation of couples from Riyadh.

The rates of abortions among consanguineous marriages were 21.92% for first cousin marriages, 13.94% for less than first cousins and a total rate for consanguineous marriages 16.49%. Abortion rate for non-consanguineous marriage is far less and approximates half the rate in consanguineous marriages (8.31%). The difference is significant at $P < 0.01$.

Also in table 24 (A), still birth rate for total consanguineous marraige was 3.74%, contrasted to 1.11% for non-consanguineous marriages. Also the differences were highly significant at $P < 0.01$. The still birth rate for first cousins approximates 52 per thousand: (5.19%).

The total prenatal losses approximates 20% (19.65%) for consanguineous marriages, which signifies that two out of ten pregnancies are lost as abortion or still birth in consanguineous marriages. This rate jumps to 26% in first cousin marriages.

For non-consanguineous marriages the rate for total prenatal losses is around 9%. If one considers this figure as the ordinary or usual loss for the population, then the consanguineous marriages are responsible for 10.65% of prenatal loss which is the attributable risk. The relative risk is 2.11

The neonatal death rate for total consanguineous marriages is 16.95% compared to 10.68% for non-consanguineous marriages. However the rate for first cousin marriages is very high: 26.28%. Here the relative risk increases to 2.46%.

For total wastage, for the non-consanguineous marriages was 19%, whereas the rate for consanguineous marriages was 33.42%.

The first cousins the total wastage rate was 45.75% and the relative risk increases to 2.4%.

These figures prove beyond doubt that total wastage will be more than doubled with consanguineous marriages.

Congenital Disorders. Tables (25) and (26) illustrated by Fig (15)

It was possible to review the condition at birth of 1813 offsprings through interrogation of mothers (418) concerning congenital malformations of their offsprings: 190 mothers had consanguineous whereas 228 had non-consanguineous marriage). Also present history of diseases which may have a heredofamilial etiology was considered. The offsprings of C.M. reviewed were 819, whereas offsprings of non-consanguineous marriage amount to 994. It was a very difficult task and depended greatly on the memory of the mother, her intellectual capacity, her educational level and her willingness to deliver correct information. The results were not exhaustive nor exclusive and cannot be used for generalization. Varification of mother's assessment was not possible in some cases specifically for those offsprings who left home for marriage, work, education or death. Whenever possible, the investigator asked to see the deformed offspring in the primary health care centre nearest to their house. Medical documents or records for any deformed offspring as well as

family files in primary health care centres were consulted for details mentioned concerning the deformity. All acquired deformities were excluded e.g. poliomyelitis deformity, accident sequelae ... etc.

In the consanguineous group sickle cell disease had a rate of 6 per thousand, whereas in the non-consanguineous group, the rate was only one per thousand Congenital Heart Disease was detected in 3.7 per thousand in the consanguineous group and only one per thousand in the non-consanguineous group.

Club foot and other foot deformities were the most prominant in both types of marriages (7.4 and 3 per thousand in consanguineous and non-consanguineous groups respectively).

The total congenital deformity rate in consanguineous group highly exceeded the rate in the non-consanguneous (24.4 and 8 per thousand respectively).

The difference in total deformity rate was significant at $P = 0.01$ (X^2 - test).

Other Disorders which have genetical association. Table (26) illustrated by Fig. (16)

The two conditions which were considered included Insulin-dependent Diabetes Mellitus (type I) and essential hypertension.

The total disorder rate for both conditions in consanguineous offsprings was 56.2 per thousand. Whereas in non-consanguineous offsprings the rate was 36.2 per thousand.

In C.M., diabetes type I had a rate of 22 per thousand contrasted to 14 per thousand in non-consanguineous offsprings.

In C.M. essential hypertension had a rate of 34.2 per thousand contrasted to 22 per thousand in non-consanguineous offsprings.

These rates are not for generalization.

DEMOGRAPHIC PATTERN OF THE STUDY SAMPLE .

TABLE (1):DISTRIBUTION OF RESPONDENTS ACCORDING TO PRIMARY HEALTH CARE CENTRES AND SEX

CATCHMENT AREA OF HEALTH CENTRE	MALES		FEMALES		TOTAL	
	NO.	%	NO.	%	NO.	%
SULTANA.	162	27.2	178	27.3	340	27.2
AL-RHODA.	139	23.4	152	23.3	291	23.3
AL-DAR AL-BAIDA.	121	20.3	132	20.2	253	20.3
AL-BADIAH.	87	14.6	96	14.7	183	14.7
AL_MOHAMADIAH.	86	14.5	95	15.5	181	14.5
TOTAL	595	47.7	653	52.3	1248	100.0

BY USING X2 IT WAS FOUND THAT THERE IS NO SIGNIFICANT DIFFERENCE IN SEX DISTRIBUTION AT P>0.05

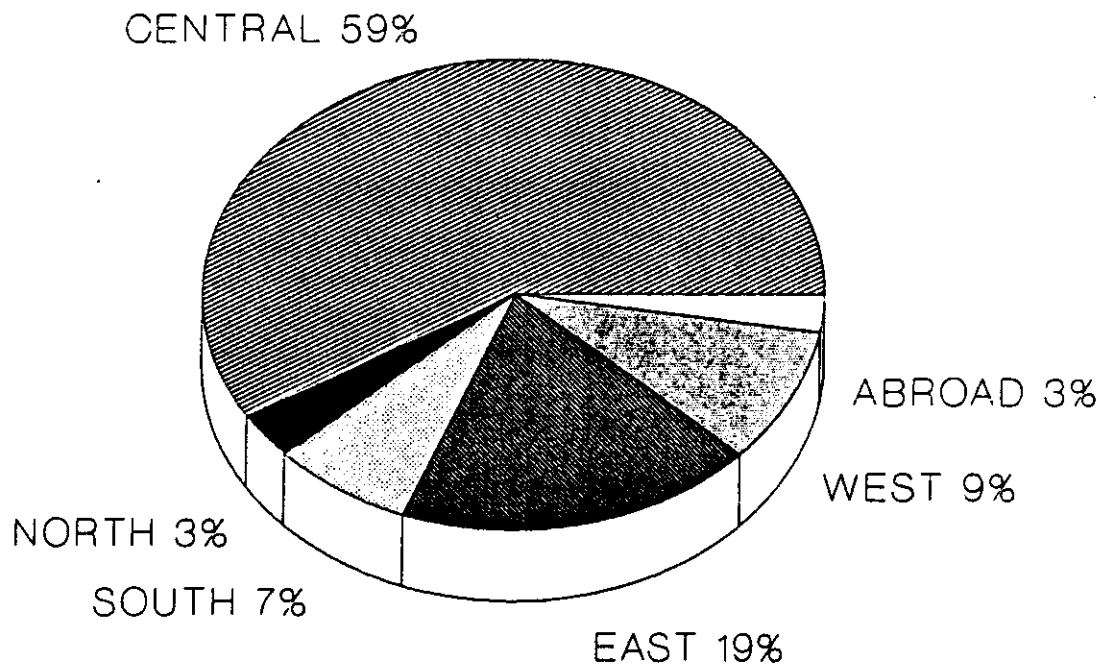
TABLE (2) DISTRIBUTION OF RESPONDENTS ACCORDING TO PLACE OF ORIGIN WITHIN THE KINGDOM

REGION	NO.	%
CENTRAL	733	58.7
EAST	235	18.8
WEST	116	9.3
SOUTH	92	7.4
NORTH	40	3.2
ABROAD *	32	2.6
TOTAL	1248	100.0

*THESE ARE NON SAUDIS WHO WERE GRANTED THE SAUDI NATIONALITY.

FIG (5)

DISTRIBUTION OF RESPONDENTS ACCORDING TO PLACE AND ORIGIN



REGIONS

TABLE (3): AGE DISTRIBUTION OF THE SAMPLE INVESTIGATED.

AGE IN YEARS	FREQUENCY	%	CUMULATIVE FREQUENCY	
			NO	%
< 20	62	4.97	62	4.97
20 -	171	13.7	233	18.67
25 -	207	16.6	440	35.27
30 -	241	19.3	681	54.57
35 -	192	15.4	873	69.97
40 -	181	14.5	1054	84.47
45 -	78	6.25	1132	90.72
50 -	52	4.17	1184	94.89
55 -	42	3.37	1226	98.26
60 -	15	1.20	1241	99.46
⩾ 60	7	0.56	1248	100.0

AVERAGE AGE IN YEARS : 34.94 $\pm$ 10.5

FIG (6) AGE DISTRIBUTION OF THE SAMPLE INVESTIGATED

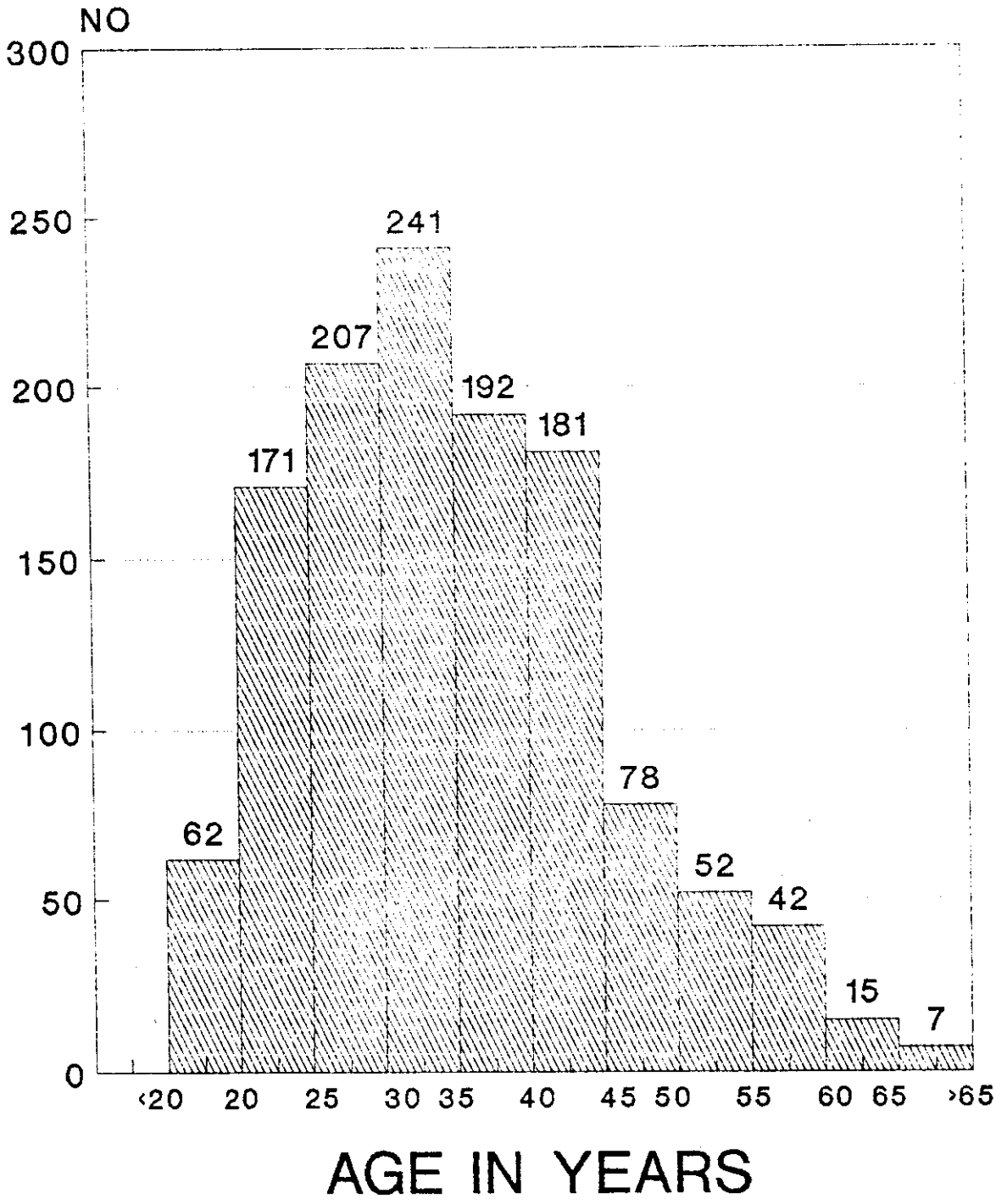


TABLE (4): DISTRIBUTION OF AGE -SEX AND TYPE OE MARRIAGE.

AGE IN YEARS	FEMALES			MALES			TOTAL		GRAND TOTAL
	C.M.	N.C.M	TOTAL	C.M.	N.C.M	TOTAL	C.M.	N.C.M	
(20	14	18	32	13	17	30	27	35	62
20 -	43	41	84	50	37	87	93	78	171
25 -	46	69	115	30	62	92	76	131	207
30 -	50	73	123	50	68	118	100	141	241
35 -	52	51	103	43	46	89	95	97	192
40 -	43	52	95	39	47	86	82	99	181
45 -	18	22	40	17	21	38	35	43	078
50 -	12	15	27	11	14	25	23	29	052
55 -	10	12	22	09	11	20	19	23	042
60 -	4	4	08	03	04	07	07	08	015
) 60	2	2	04	01	02	03	03	04	007
TOTAL	294	359	653	266	329	595	560	688	1248
%	45.02	54.98	100.0	44.71	55.29	100.0	44.87	55.13	100.0

AGE DIFFERENCE IN BETWEEN CONSANGUINEOUS AND NON CONSANGUINEOUS MARRIAGES WERE INSIGNIFICANT AT P) 0.05

Fig. (7) DISTRIBUTION OF AGE - SEX AND TYPE OF MARRIAGE.

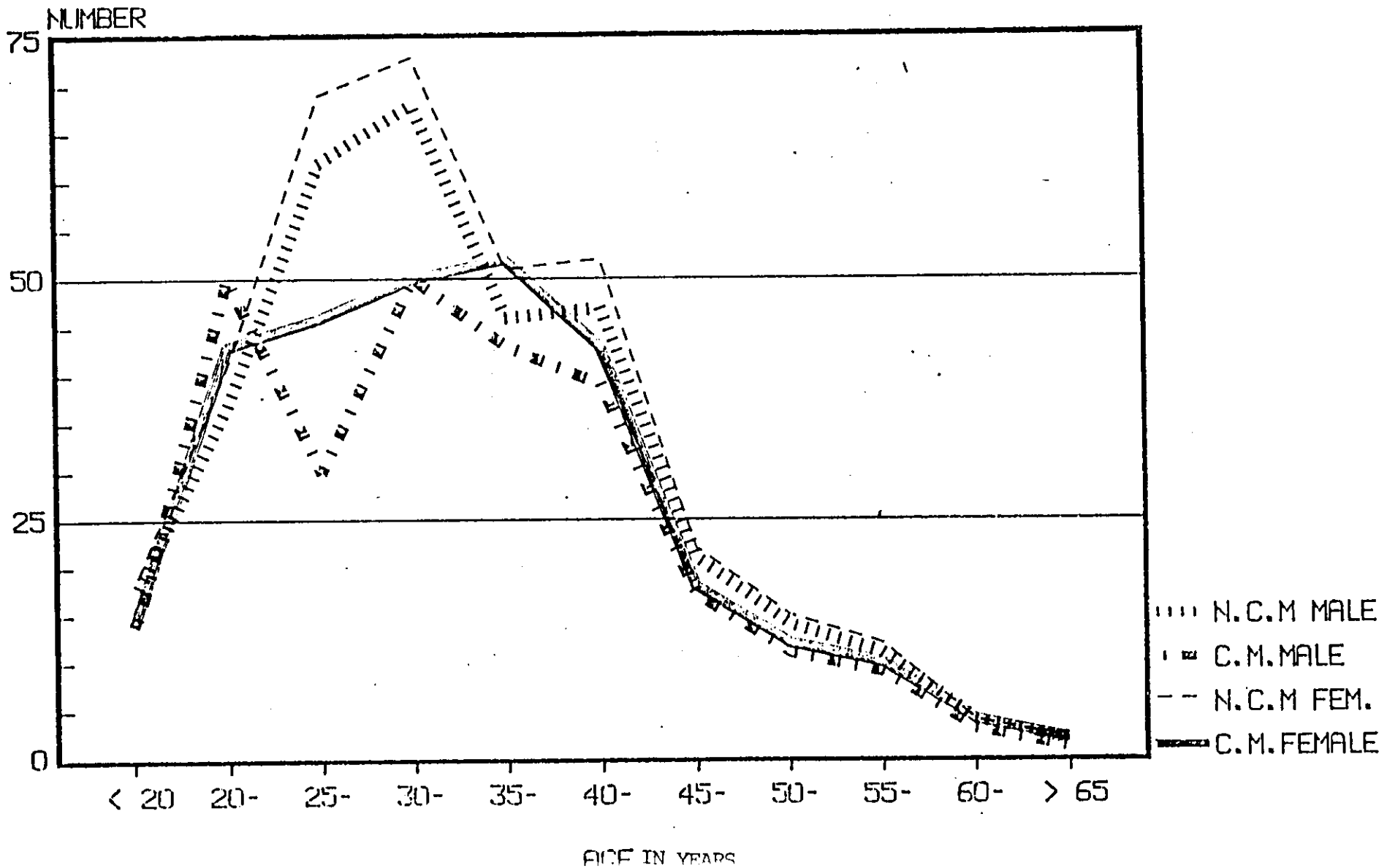


TABLE (5) LEVEL OF EDUCATION OF MALES AND FEMALES

LEVEL OF EDUCATION	MALES		FEMALES		TOTAL	
	NO.	%	NO.	%	NO	%
ILLITERATE	127	21.3	249	38.2	376	30.13
READ AND WRITE	109	18.4	118	18.1	227	18.19
PRIMARY LEVEL	158	26.5	133	20.3	291	23.32
INTERMEDIATE AND SECONDARY	152	25.5	111	17.0	263	21.07
UNIVERSITY AND HIGH LEVEL	049	08.3	042	06.4	091	07.29
TOTAL	595	100.00	653	100.0	1248	100.0

BY USING X2 IT WAS FOUND THAT THERE WAS SIGNIFICANT DIFFERENCE AT P< 0.05

Fig. (8) LEVEL OF EDUCATION OF MALES AND FEMALES

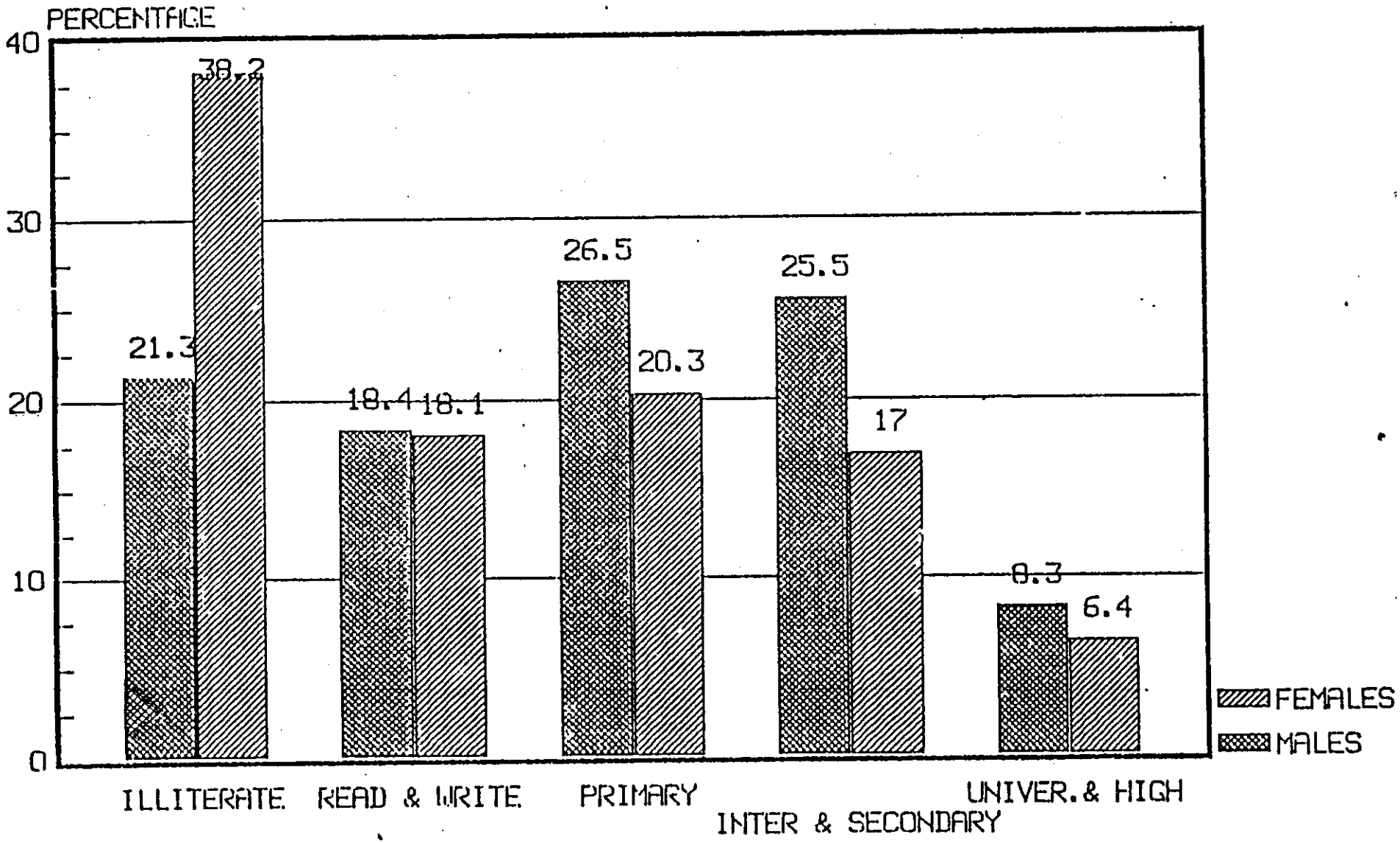


TABLE (6) DISTRIBUTION OF THE RESPONDENTS ACCORDING TO LEVEL OF EDUCATION AND TYPE OF MARRIAGE.

LEVEL OF EDUCATION	FREQUENCY	%	C.M. FREQUENCY	%
ILLITERATE	376	30.13	233	61.97
READ AND WRITE	227	18.19	113	49.78
PRIMARY LEVEL	291	23.32	132	45.36
INTERMEDIATE AND SECONDARY	263	21.07	063	23.95
UNIVERSITY AND HIGH LEVEL	091	07.29	019	20.88
TOTAL	1248	100.00	560	44.87

TABLE (7): OCCUPATIONAL DISTRIBUTION OF THE SAMPLE INVESTIGATED .

OCCUPATION	SAMPLE INVESTIGATED	
	FREQUENCY	%
HOUSEWIFE	391	31.33
STUDENT.	383	30.70
LABOURERS.*	229	18.35
PROFFESSIONAL.	067	05.37
ARMY AND POLICE.	056	04.49
CLERICAL.	033	02.64
COMMERCE.	016	01.28
UNEMPLOYED.	073	05.85

*SKILLED AND NON SKILLED.

TABLE (8) MARITAL DISTRIBUTION OF THE SAMPLE INVESTIGATED

STATUS	FREQUENCY	%	CUMULATIVE FREQUANCY	CUMULATIVE PERCENT
MARRIED	1207	96.7	1207	96.70
DIVORCED	11	0.88	1218	97.58
WIDOWED	30	2.40	1248	100.00

TABLE (9): TEMPORAL TREND IN RATE OF CONSANGUINEOUS MARRIAGES

YEAR OF MARRIAGE	C.Ms.	%	TOTAL
BEFORE 1950.	30	47.1	64
1950 -	59	45.3	130
1960 -	160	44.8	358
1970 -	218	44.2	493
1980 +	89	43.6	203
TOTAL	556*	44.9	1248

* THE AGE OF MARRIAGE FOR 4 CASES WAS MISSING.

* THE T TEST FOR PROPORTIONS FOR THOSE MARRIED BEFORE 1950 AND THOSE MARRIED 1980 + SHOWED A SIGNIFICANT DIFFERENCE IN TREND OF C.Ms. AT $P < 0.01$ DENOTING A CHANGE IN ATTITUDE.

TABLE (10) CONSANGUINITY BY AGE OF RESPONDENTS IN THE SAMPLE INVESTIGATED

DEGREE OF CONSANGUINITY	AGE OF RESPONDENT								TOTAL	
	<20 Y		20-<30		30-<40		40+			
	NO	%	NO	%	NO	%	NO	%	NO	%
DOUBLE FIRST COUSIN	7	11.3	10	2.6	4	0.9	0	0	21	1.7
FIRST COUSIN	12	19.4	85	22.4	104	24.0	93	24.8	294	23.6
RELATED (LESS THAN FIRST COUSIN)	14	22.6	75	19.9	82	19.0	74	19.7	245	19.6
NOT RELATED	29	46.7	208	55.1	243	56.1	208	55.5	688	55.1
TOTAL	62	100	378	100	433	100	375	100	1248	100

TABLE (11) : AVERAGE IN-BREEDING COEFFICIENT (F) AS CALCULATED FOR THE RIYADH STUDY.

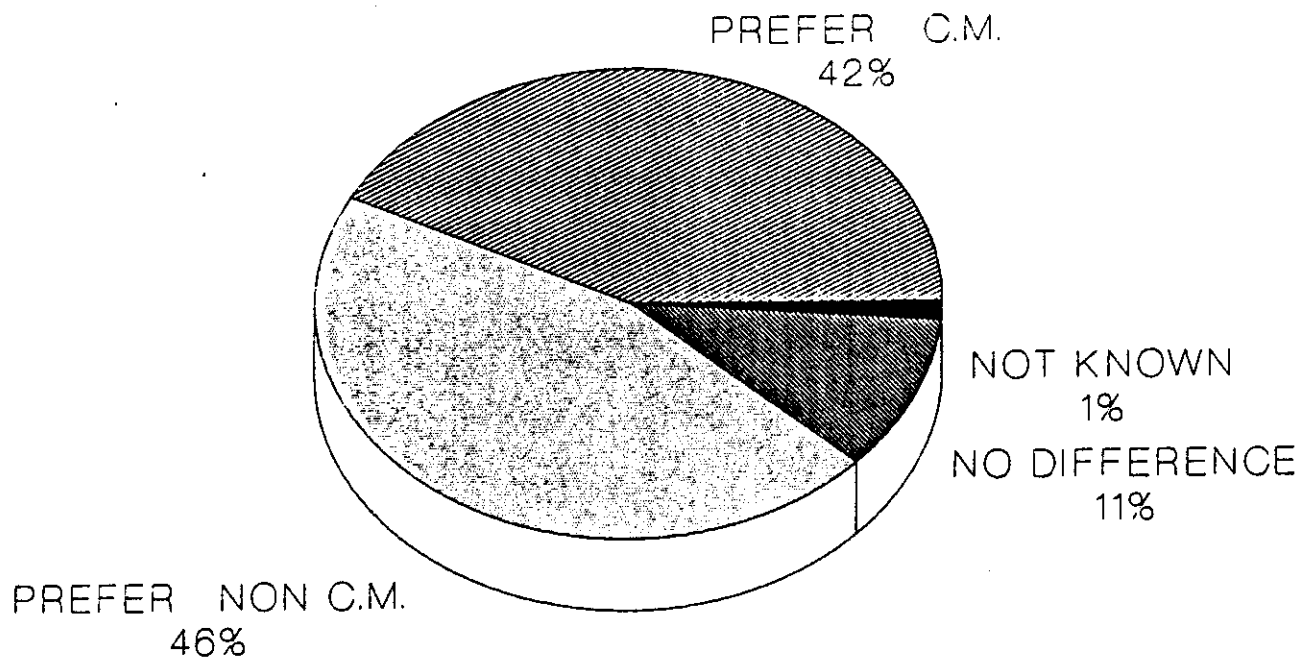
DEGREE OF RELATIONSHIP	NO.	PROPORTION P	CHANCE OF HOMOZYGOCITY F	P F
DOUBLE FIRST COUSINS .	21	0.017	1/8 =(0.1250)	0.02125
FIRST COUSINS.	294	0.236	1/16 =(0.0625)	0.01475
RELATED (LESS THAN 1ST COUSINS).	245	0.196	(1/32 +1/64)/2 = (0.0234)	0.00458
NOT RELATED (NON CONSANGUINEOUS).	688	0.551	0	0.00000
TOTAL.	1248	1.000		0.04050

TABLE (12): RESPONDENT'S PREFERNCE FOR TYPE OF MARRIAGE IN CONSANGUINEOUS AND NON CONSANGUINEOUS MARRIAGES.

RESPONDENT'S PREFERNCE	FREQUENCY	%
PREFER C.M.	528	42.3
PREFER NON C.M.	570	45.7
NO DIFFERENCE.	132	10.6
DO NOT KNOW.	018	01.4
TOTAL	1248	100.0

FIG(9)

RESPONDENT'S PREFERENCE FOR TYPE OF MARRIAGE (C.M OR NON C.M.)



RESPONDENTS PREFERENCE

TABLE (13) : RESPONDENT S PREFERENCE FOR C.M. CATEGORIZED ACCORDING TO TYPE OF MARRIAGE.

PREFERENCE	TYPE OF MARRIAGE OF RESPONDENT				TOTAL	
	C.M	%	NON C.M.	%	NO.	%
YES	360	68.2	168	31.8	528	100
NO	132	23.2	438	76.8	570	100
TOTAL	492	44.8	606	55.2	1098	100

X2 TEST (FOUR FOLD TABLE) -ONE D.F . SHOWED THAT ASSOCIATION BETWEEN TYPE OF MARRIAGE AND PREFERENCE IS HIGHLY SIGNIFICANT AT P< 0.01

TABLE (14): REASONS GIVEN FOR PREFERENCE FOR CONSANGUIEOUS MARRIAGES*.

REASON(S)**	NO.	%
A RELATED SPOUSE IS MORE TOLERANT AND HAS MORE PATIENCE.	216	40.9
LESS TROUBLESOME.	200	37.9
PROPERTY KEPT IN THE FAMILY.	185	35.0
RELATIVES NEED MORE CONCERN AND HAVE SOME RIGHT IN BEING PROTECTED .	149	28.2
THE MOST EASY TO KNOW AND TO SEE.	121	22.9
MARRIAGE MORE SUCCESSFUL.	100	18.9
OTHER REASONS.	037	07.0

* C.Ms. N =528
** ONE OR MORE REASONS MAY HAVE BEEN GIVEN BY EACH RESPONDENT.

TABLE (15) : REASONS GIVEN FOR NOT PREFERING CONSANGUINEOUS MARRIAGE.*

REASONS **	NUMBER	%
GREATER CHANCE OF MALFORMATIONS	331	58.1
PROVOKES FAMILY TROUBLES .	296	51.9
ISLAM ENCOURAGES NON C.M.	103	18.1
ACCORDING TO PARENTS ADVICE.	40	7.0
PAST-EXPERIENCE OF OTHER FAMILY MEMBERS.	29	5.1
OTHER REASONS.	18	3.2

*C. Ms. (N = 570)

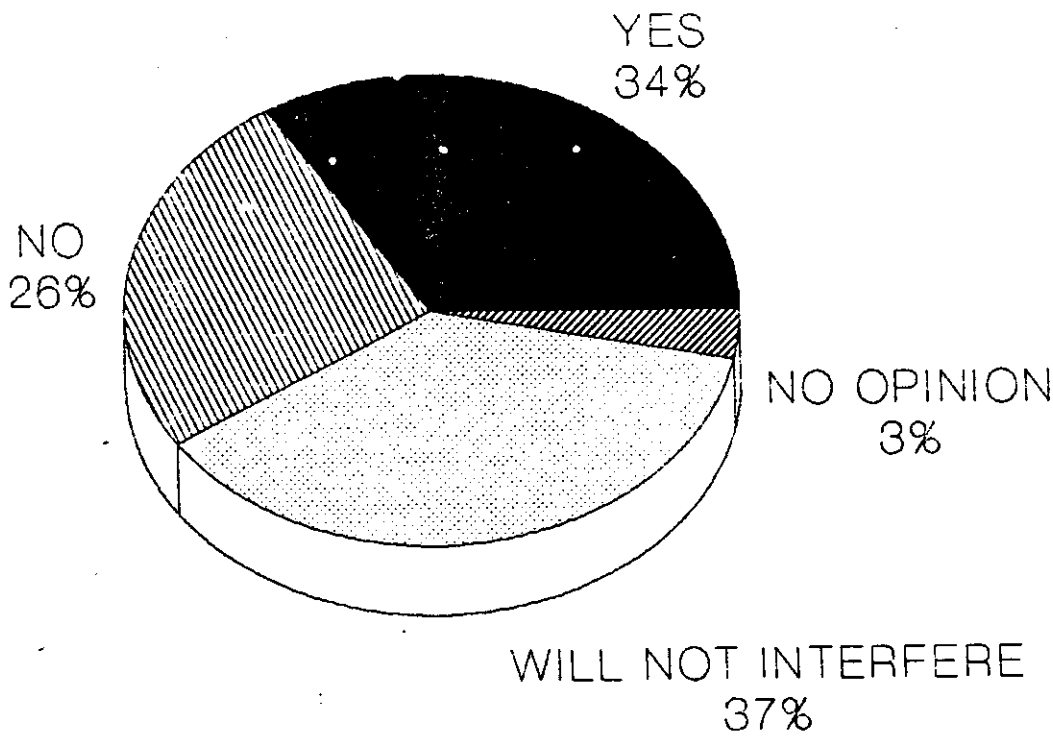
** ONE OR MORE REASONS MAY HAVE BEEN GIVEN BY EACH RESPONDENT.

TABLE (16) :WOULD YOU ENCOURAGE YOUR CHILDREN TO MARRY A RELATIVE ?

RESPONSE	FREQUENCY	%
YES	421	33.7
NO	319	25.6
WILL NOT INTERFERE	465	37.3
CAN NOT FORMULATE AN OPINION	43	3.4
TOTAL.	1248	100.0

FIG (10)

WOULD YOU LIKE YOUR CHILDREN TO MARRY A RELATIVE ?



RESPONSE

TABLE (17) :KNOWLEDGE OF RESPONDENTS CONCERNING INFLUENCE OF CONSANGUINEOUS MARRIAGES IN CAUSATION OF INHERITED DISORDERS

RESPONSE	FREQUENCY	%
NO EFFECT	290	23.2
INCREASE INHERITED DISORDERS	695	55.7
DECREASE INHERITED DISORDERS	11	00.9
DO NOT KNOW	252	20.2
TOTAL.	1248	100.0

FIG (12)
RESPONDENTS EVALUATION OF THE ADEQUACY OF PUBLIC HEALTH EDUCATION WITH RESPECT TO ADVERSE EFFECTS OF C. M.

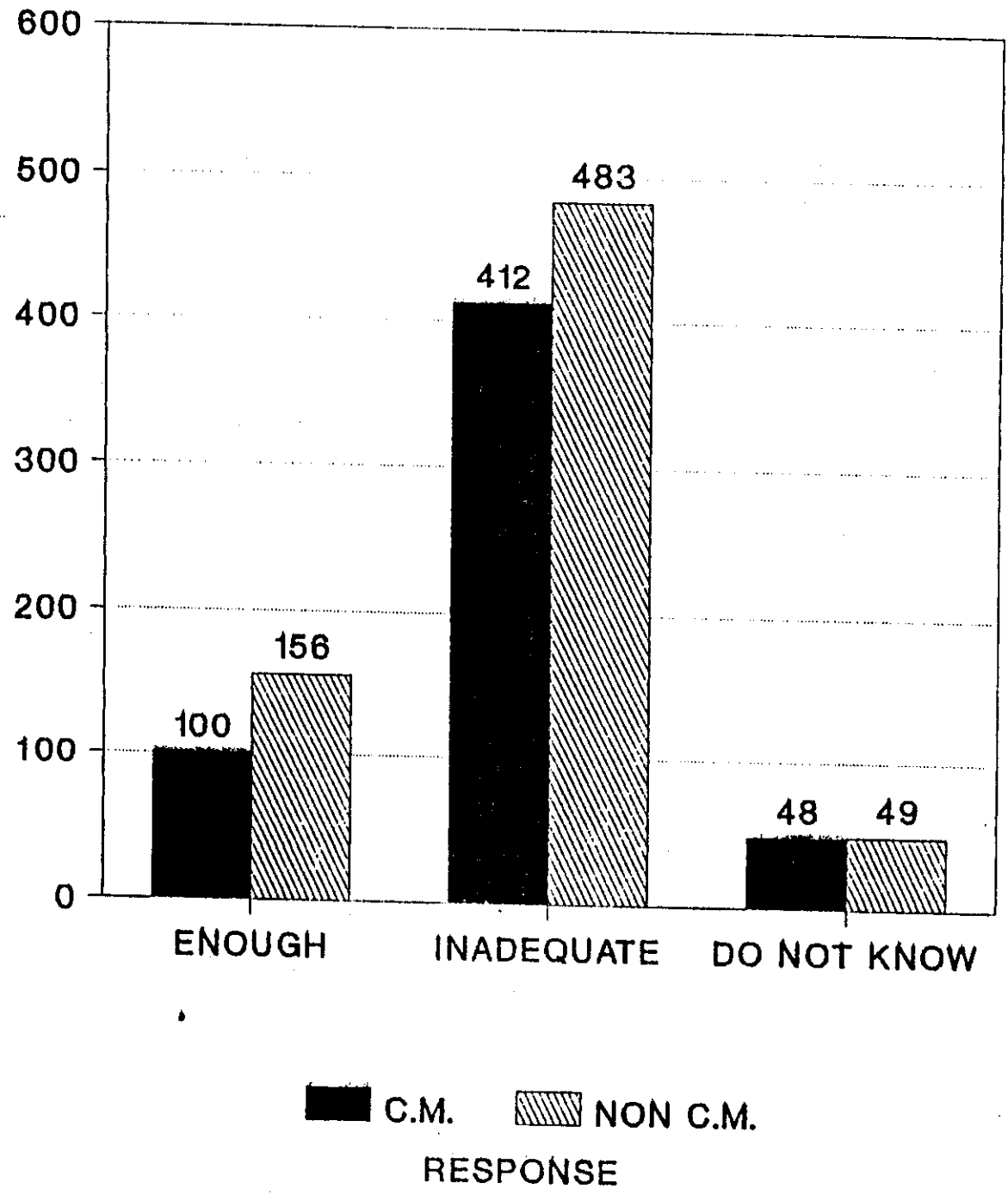


TABLE (19) VARIATION IN RESPONDENTS ANSWERS RELATED TO THEIR TYPE OF MARRIAGE.

RESPONDENTS MARRIAGE TYPE	WOULD YOU ENCOURAGE YOUR CHILDREN TO MARRY A RELATIVE				WHAT IS THE ROLE OF C.MS. IN HEREDITARY DISORDERS				IS THERE IS ENOUGH PUBLIC HEALTH EDUCATION			
	YES	%	NO	%	NO EFFECT		INCREASE IT		YES	%	NO	%
C.M	286	68	86	27	205	70.6	104	15	132	51.6	460	51.4
NON C.M.	135	32	233	73	85	29.4	591	85	124	48.4	435	48.6
TOTAL	421	100.0	319	100.0	290	100.0	695	100.0	256	100.0	895	100.0
P VALUE *	LESS THAN 0.01				LESS THAN 0.01				MORE THAN 0.05			

* X2 WAS USED AS A TEST OF SIGNIFICANCE.

TABLE (20): KNOWLEDGE OF IMPORTANCE OF PREMARITAL COUNSELING ACCORDING TO TYPE OF MARRIAGE.

PREMARITAL COUNSELING	TYPE OF MARRIAGE				TOTAL % (COLUMN)
	C.M.	(RAW %)	NON C.M.	(RAW %)	
IMPORTANT.	203	(34.7)	382	(65.3)	585(46.9)
NOT IMPORTANT.	307	(57.7)	225	(42.3)	532(42.6)
CANNOT DECIDE.	50	(38.2)	81	(61.8)	131(10.5)
TOTAL	560	(44.9)	688	(55.1)	1248(100)

X2 TESTING SHOWED THAT THERE IS A STATISTICALLY SIGNIFICANT DIFFERENCE BETWEEN BOTH GROUPS CONCERNING IMPORTANCE OF PREMARITAL COUNSELING AT P < 0.01

TABLE (21) KNOWLEDGE ABOUT ISLAMIC TEACHING WITH RESPECT TO CONSANGUINEOUS MARRIAGES .

ISLAMIC KNOWLEDGE		EDUCATIONAL LEVEL			TOTAL	GRAND TOTAL	
		PRIM.OR LESS	INTERMEM/SEC.	UNIVER./HIGH.		NO.	%
ISLAM ENCOURAGES C.MS.	C.M.	292	30	6	328	503	40.3
	NON C.M.	132	38	5	175		
ISLAM DISCOURAGES	C.M.	100	53	25	178	662	53.0
	NON C.M.	320	114	50	484		
ISLAM IS NOT CONCERNED WITH C.M.	C.M.	10	7	2	19	36	2.9
	NON C.M.	4	12	1	17		
DO NOT KNOW	C.M.	32	3	0	35	47	3.8
	NON C.M.	4	6	2	12		
TOTAL	C.M.	434	93	33	560	1248	100
	NON C.M.	460	170	58	688		
GRAND TOTAL		894	263	91	1248		

APPLICATION OF X2 TEST SHOWED THAT THERE IS A STATISTICALLY SIGNIFICANT DIFFERENCE BETWEEN EDUCATIONAL LEVELS OF BOTH GROUPS CONCERNING ISLAMIC TEACHING AT P (0.005

TABLE (22):TYPE OF MARRIAGE AND THE AVERAGE NUMBER OF PREGNANCIES / WOMAN WITH RESPECT TO AGE GROUPS.

AGE IN YEARS	CONSANGUINEOUS MARRIAGES		NON CONSANGUINEOUS MARRIAGES	
	NO. OF WOMEN	AVERAGE NO.OF PREGNANCIES	NO. OF WOMEN	AVERAGE NO.OF PREGNANCIES
< 30	103	4.3	128	4.8
30 -	102	5.7	124	5.3
40 -	61	6.4	74	6.2
> 50	28	7.4	33	8.6
TOTAL	294	5.95 ± 1.2	359	6.23 ± 1.6

THE DIFFERENCE IS INSIGNIFICANT (P> 0.1) BETWEEN THE NUMBER OF PREGENANCIES FOR CONSANGUINEOUS CONTRASTED TO NON-CONSANGUINEOUS MARRIAGES.

TABLE 23(B): PERCENTILES FOR THE DISTRIBUTION OF BIRTH WEIGHTS (GRAM)

GROUP	PRECENTILES									
	NO.	2.5	5	10	25	50	75	90	95	97.5
CONSANGUINEOUS	129	1715	2230	2630	3010	3078	3280	3840	4190	4260
NON CONSANGUINEOUS	157	2035	2370	2780	3070	3162	3560	3970	4260	4540

TABLE 24(A): PRENATAL LOSSES AND DEGREE OF CONSANGUINITY.

DEGREE OF CONSANGUINITY	PREGNANCIES	ABORTIONS*		CHILDREN BORN**	STILL BIRTHS		TOTAL PRENATAL LOSSES	
	NO.	NO.	%	NO.	NO.	%	NO.	%
FIRST COUSINS	365	80	21.92	289	15	5.19	95	26.03
LESS THAN FIRST COUSIN	775	108	13.94	673	21	3.12	129	16.65
TOTAL CONSANG.	1140	188	16.49	962	36	3.74	224	19.65
NON-CONSANG.	2647	220	8.31	2433	27	1.11	247	9.33

* X2 TEST FOR ABORTIONS FOR TOTAL CONSANGUINEOUS AND NON CONSANGUINEOUS GROUPS SHOWED THAT THERE IS A HIGHLY SIGNIFICANT DIFFERENCE BETWEEN BOTH GROUPS AT P <0.001

** X2 TEST FOR STILL BIRTHS OF BOTH GROUPS SHOWED A SIGNIFICANT DIFFERENCE AT P <0.001

Fig (13) : PRENATAL DEATHS AND PARENTAL CONSANGUINITY.

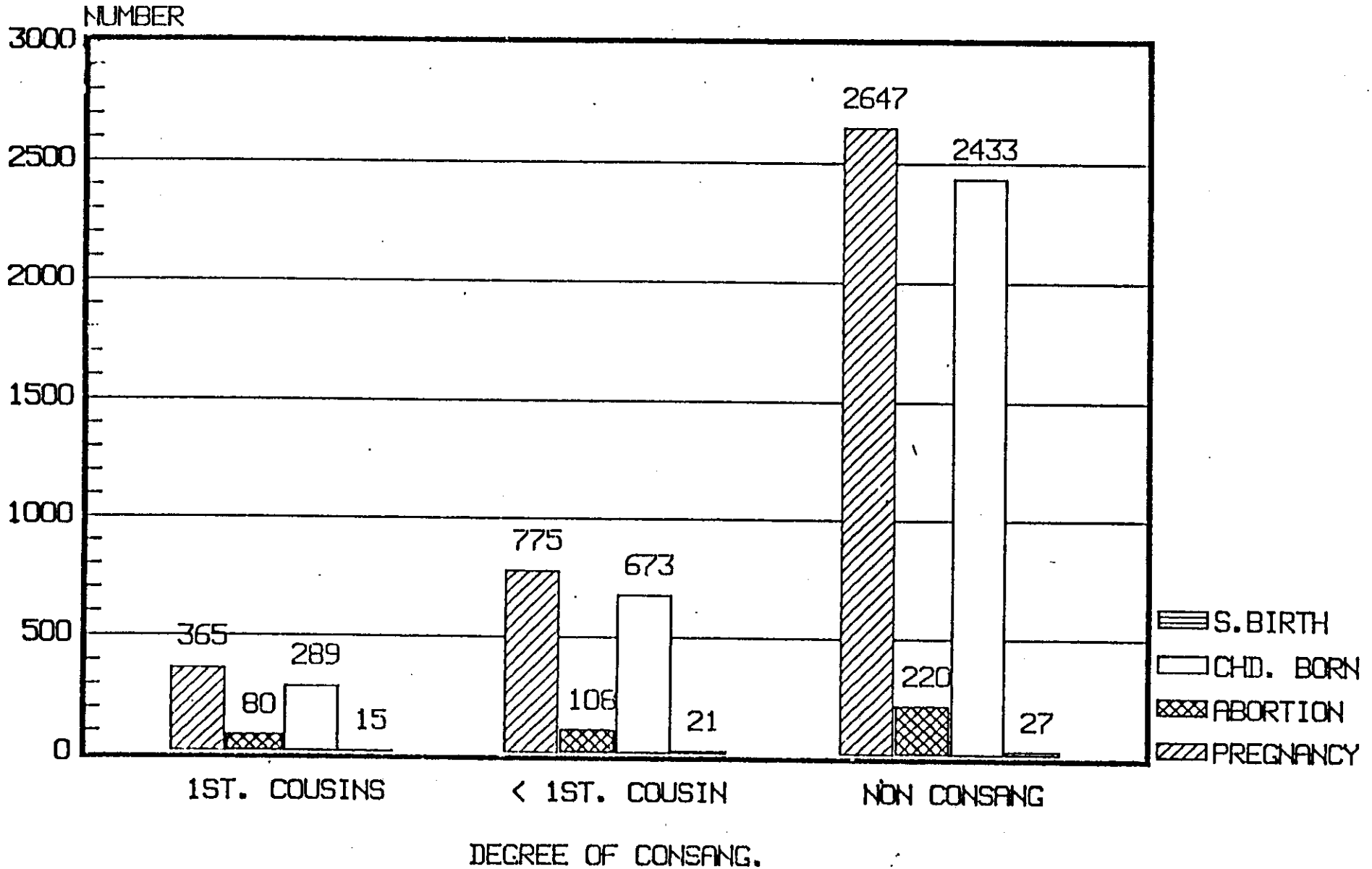


TABLE 24(B): NEO-NATAL DEATHS AND TOTAL WASTAGE WITH RESPECT TO PARENTAL CONSANGUINITY.

DEGREE OF CONSANGUINITY	CHILDREN BORN ALIVE	NEONATAL DEATHS		TOTAL WASTAGE	
		NO	%	NO	%
FIRST COUSINS	274	72	26.28	167	45.75
LESS THAN FIRST COUSINS	652	85	13.04	214	27.61
TOTAL CONSANG.	926	157	16.95	381	33.42
NON - CONSANG.	2406	257	10.68	504	19.04

Fig (14) : NEO-NATAL DEATHS AND TOTAL WASTAGE WITH RESPECT TO PARENTAL CONSANGUINITY.

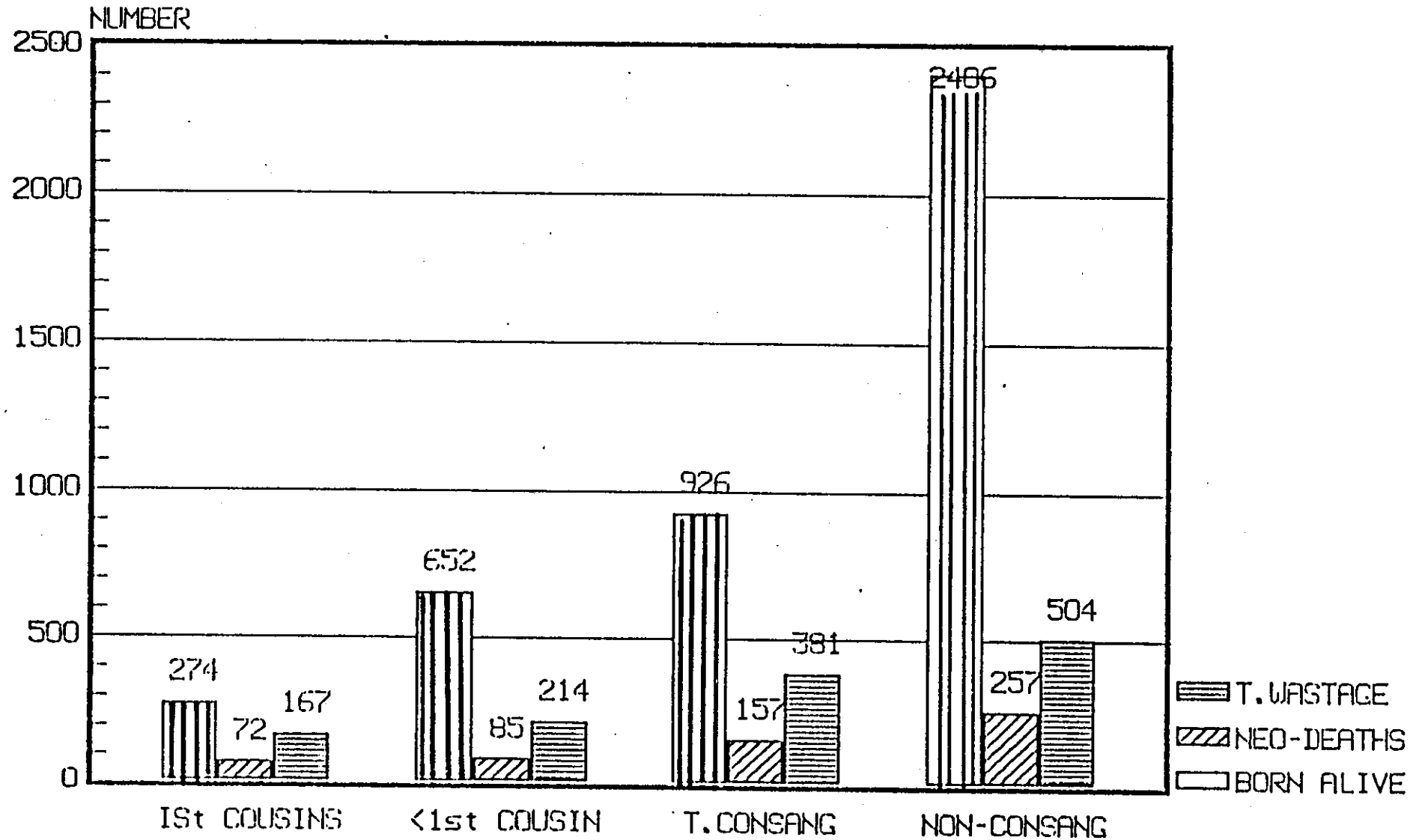


TABLE (25) : CONGENITAL AND HEREDOFAMILIAL DISORDERS.

CONSANGUINITY DISORDER.	CONSANGUINEOUS(819)		NON-CONSANGUINEOUS(994)		TOTAL
	NO.	PER THOUSAND	NO.	PER THOUSAND	PER THOUSAND
SICKLE CELL ANAEMIA.	5	6	1	1	6
MENTAL RETARDATION.	3	3.7	2	2	5
CARDIAC ABNORMALITY.	3	3.7	1	1	4
HARE-LIP / CLEFT PALATE.	1	1.2	0	0	1
CLUB FOOT & OTHER FOOT DEFORMITY	6	7.4	3	3	9
POLYDACTYLY.	1	1.2	1	1	2
HYPOSPADIUS.	1	1.2	0	0	1
TOTAL.	20	24.4	8	8	28

X2 TEST WAS APPLIED FOR THE TOTAL DISORDERS OF BOTH GROUPS AND THE DIFERENCE WAS SIGNIFICANT AT P < 0.01

Fig (15) : CONGENITAL AND HEREDOFAMILIAL DISORDERS.

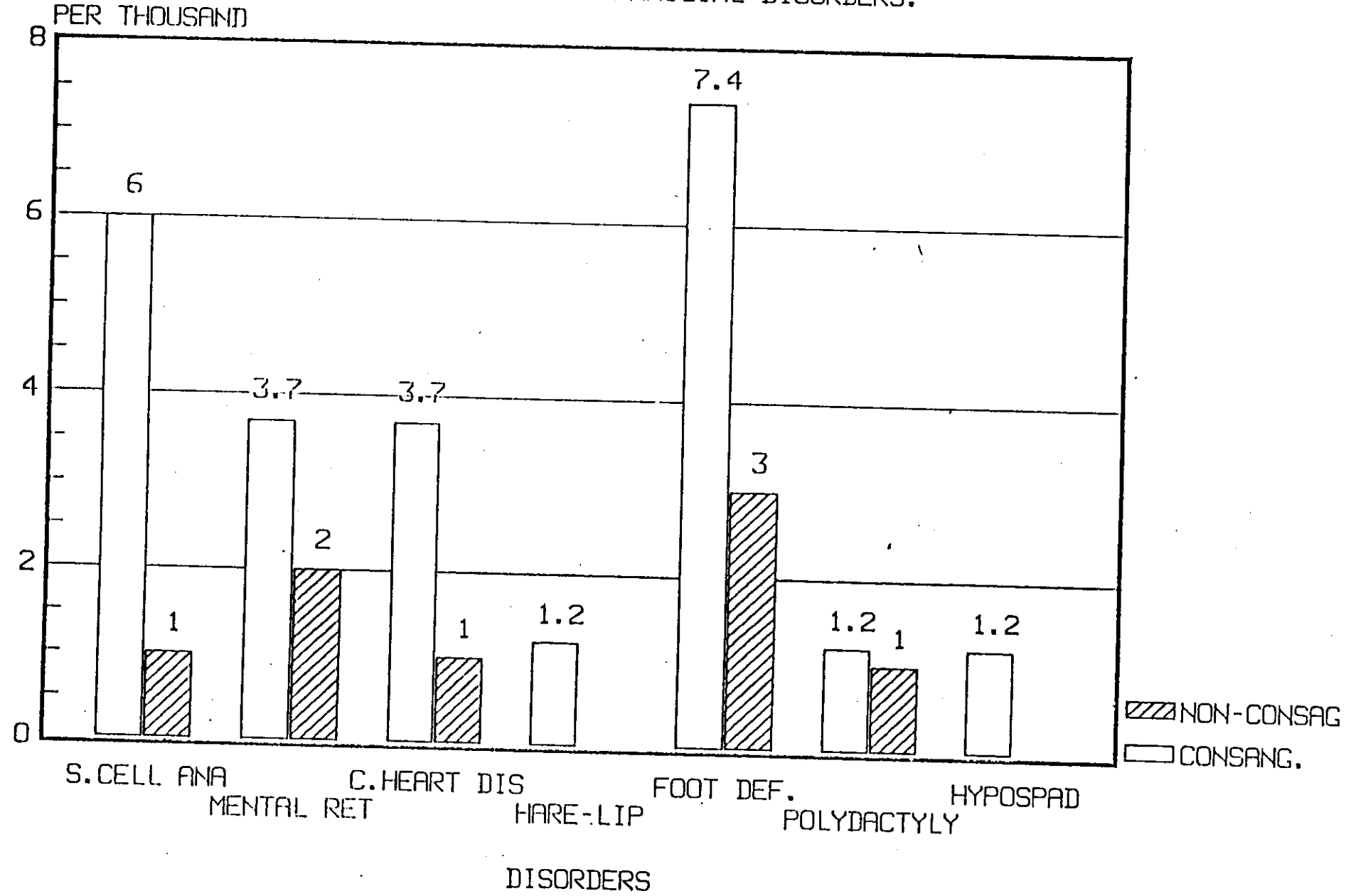


TABLE (26):OTHER DISORDERS WHICH HAVE GENETICAL ASSOCIATION.

DISORDER	CONSANGUINEOUS (819)		NON CONSANGUINEOUS(994)	
	NO.	%.	NO	%.
DIABETES MELLITUS (TYPE I)	18	22	14	14
ESSENTIAL HYPERTESION	28	34.2	22	22
TOTAL	46	56.2 %.	36	36.2 %.