

Distribution of Sociobiological Features Amongst Patients of a Government Hospital of Southern Punjab, Pakistan

Afsar Mian and Zahida Siddique

Institute of Pure and Applied Biology, Bahauddin Zakariya University, Multan 60800, Pakistan

KEY WORDS Multan. Sex. Per-capita Income. Blood Groups. Age. Education. Profession. Marital Status. Smoking. Origins. Patient Population.

ABSTRACT Analysis of 1533 patients of Nishtar Hospital, Multan suggests a higher representation of males (65.6%), and adults and post adult age classes. The allelic frequencies of ABO. ($A=22.74\%$, $B=32.80\%$, $O=46.55\%$) and Rh ($d=30.32\%$) blood groups differ from that suggested previously for Multan. The patients mainly come from lower income and higher literacy groups. There is a low representation of in different individuals and higher representation of labourers, secretarial and business professions. The rural areas have a lower representation and hospital take is inversely proportional to the distance. Unmarried persons constitute some 6% and smokers 33% (20% active, 13% passive) of the patients. Jats and Araneen are more frequent than Balochs and Pathans.

INTRODUCTION

Each hospital has a specific socio-biological characters of its patient population, largely depending upon its location, facilities available, cost of the services, socio-economic status of the general masses and general prevalence of the diseases around. The prevalence of disease in an area is controlled by a complex interaction between the internal (Stine, 1989; Emery, 1986) and the external (Trotman and Solway, 1975; Negase et al., 1978) environmental factors and specific blend of these factors turn an area as low or high risk tracts for different human disorders (Toman, 1982; Akhtar, 1992b; Bacchus and Bill, 1992). The analysis of such data are useful in planning of the hospitals, visualizing the general population changes expected in time and space, judging the present efficiency of the hospital, focusing the present/future health hazards and development of sound based health planning.

Very little information has been recorded on the socio-biological characters of the patients and disease prevalence in the hospital population of Pakistan. The present attempt tries to place on record such information collected for the population of a large hospital located in southern Punjab (Pakistan) with the aim to provide base line information for future reference.

MATERIAL AND METHODS

A total of 1533 patients were contacted in different wards of the Nishtar Hospital, Multan, between February and September 1993, trying to include all the patients of different wards, each visited at different days. The data on sex, age, family income, total dependents, educational level, profession, marital status, smoking, urban/rural origin, ethnic origin and geographic origin was collected directly from patient/his attendants. Per capita income was calculated by dividing the annual family income by total dependents. The data on blood groups and disease were collected from hospital record/diagnosis.

The Nishtar hospital is the largest and reputed teaching government hospital of the southern Punjab (Pakistan). For the large part it is a free hospital, where medical services, bed and part of medicine is provided free of charge, while meals are available at nominal charges. The hospital is staffed with highly qualified doctors and medical staff. General human population around mainly consists of migrants of different origins settling in the area in different fluxes (population movements at the time of independence, and from adjacent areas of Punjab, Balochistan and NWFP) alongwith the original population of the area.

RESULTS

Biological Features

The present data (Table 1) suggests that males are represented in higher ($\chi^2=152.18$) frequency (65.62%) than females (34.58%). The major part of the population falls between 16 and 60 years, children (2.74%) and olds (8.28%) being relatively rare. There is a definite preponderance of adults (31-45 years, 42.33%), while youngs (16-30 years) and post adults (46-60 years) appear in decreasing order of their frequencies. This pattern is equally followed in males and females. The average age is calculated to be 36.75 ± 0.35 years, which is not significantly different ($t=1.5438$) in males (37.13 ± 0.45 yr) and females (36.03 ± 0.55 yr).

Table 2 suggests that in ABO blood group series, B is present in high frequency, followed by A, O and AB, in decreasing order, yielding allelic frequencies of 46.55% 32.80% and 22.74% for O, B and A allele, respectively. In the Rh series, Rh-positives are in higher frequencies as compared with Rh-negatives, with their allelic frequencies of 69.68% for D and 30.32% for d alleles.

Social Features

The data on income status of the patients population. Table 3, suggests that 95% of the patients come from income classes with per capita income of less than Rs. 12,000 (some U.S. \$ 400, while majority (78%) have per capita income of less than Rs. 6,000 with maximum frequencies falling in per capita income class of Rs

Table 2: Frequencies of different blood group and allelic frequencies in patients of Nishtar Hospital, Multan, during summer 1993

Blood Groups	Phenotypic frequency		Allelic Frequency (%) $\pm$ Standard error
	n	%	
<i>ABO-Series</i>			
A	384	26.34	A= 22.74 $\pm$ 0.82
B	602	41.29	B= 32.80 $\pm$ 0.96
O	316	21.67	O= 46.55 $\pm$ 1.16
AB	156	10.70	
<i>Rh-series</i>			
Positive	1324	90.81	D= 69.68 $\pm$ 1.25
Negative	134	9.19	d= 30.32 $\pm$ 1.25

2,100 – 4,000. The frequencies of the patients gradual decrease with increasing income status ($r=-0.7326$, significant), though very low income class (Rs 2,000) is also represented by a lower frequency. The average per capita income is calculated to be Rs 5,069 $\pm$ 116.

There is preponderance of the illiterates (58%) in the present population. No consistent pattern is visible in the frequency of the patients with increasing education level. However the patients with 9-14 years of education have a higher representation (20%) as compared with those with <9 year or >13 years (11%) of education.

The frequency distribution in very broad occupation groups suggest a dominance of house ladies, following by farmers and labourers. The patients engaged in secretarial jobs, business and studies appear in decreasing frequencies, while some 5% can be regarded as indifferent (very young or very old).

The majority of the patients are married, the genuine unmarried constituting very small frac-

Table 1: Distribution of frequency in different age classes in the patients of Nishtar Hospital, Multan during Summer 1993

Class	Age (year)	Male		Female		Total	
		n	%	n	%	n	%
Child	(1-15)	30	2.97	12	2.29	40	2.74
Young	(16-30)	266	26.39	151	28.76	417	27.20
Adults	(31-45)	421	41.77	288	43.42	649	42.33
Post adult	(46-60)	191	18.95	107	20.38	298	19.44
Old	(>60)	100	9.92	27	5.14	127	8.28
Total		1008	65.62	525	34.58	1533	100.00

Table 3: Distributions of patients of Nishtar Hospital, Multan in classes of selected social character during summer 1993

Character/ class	n*	%
Income Status (Rs. per capita x100)		
<20	248	16.34
21-40	581	38.27
41-60	353	23.25
61-80	122	8.04
81-100	67	4.41
101-120	64	4.22
>120	83	5.47
Education (years)		
Illiterates	886	57.68
1-8	176	11.46
9-13	304	19.79
>13	170	11.07
Occupation		
House lady	431	28.41
Framer	286	18.85
Labourer	247	16.28
Secretarial jobs	178	11.73
Business	153	10.09
Student	149	9.80
Indifferent	73	4.81
Marital Status		
Married	1217	79.65
Unmarried	99	6.48
Indifferent	212	13.87
Disease Family History		
Positive	82	7.59
Negative	999	92.41
Urban/Rural Origin		
Urban	636	41.90
Rural	882	58.10
Ethnic Background		
Jat	682	46.30
Araeen	570	38.70
Baloch	133	9.03
Pathan	88	5.97
Geographic Origin (Districts)		
Multan	638	41.62
Dera Ghazi Khan	209	13.63
Vehari	124	8.09
Sahiwal	120	7.83
Khanewal	102	6.65
Muzaffargarh	86	5.61
Laieha	76	4.96
Rahim Yar Khan	62	4.04
Jhang	46	3.00
Bahawalpur	40	2.61
Rajampur	30	1.96

* Total frequencies are different for different characters, different degree of information by different patients.

tion (6%), while 14% are at premarital age. There is a dominance of non smokers, while only 20% are active smokers, while 13% are casual/passive smokers. There is slight preponderance of patients with rural origin over those claiming

urban origin. Only 7.59% of the patients indicate the presence of the disease in the family.

The data on ethnic variation suggest a higher representation of Jats and Araeen, whereas Balochs and Pathans have appeared in lower frequencies.

The geographic origins suggest that the hospital derive its patients from a very wide area of the southern Punjab (Pakistan), spread over 11 civil districts, appearing under 4 divisions, alongwith adjacent parts of Balochistan, Sindh and NWFP provinces. The major part of the population comes from Multan, and the hospital take is for the large part inversely proportional to the distance from the hospital, except for

Table 4: Frequency of some common diseases in 1533 patients of the Nishtar Hospital, Multan during summer 1993

Disease	n	%
Carcinoma	216	14.23
Liver cirrhosis	124	8.17
Hyperthyroidism	75	4.94
Renal failures	61	4.02
Ulcers	55	3.62
Kidney stone	52	3.43
Tuberculosis	52	3.43
Gynaecological problems	50	3.29
Appendicitis	41	2.70
Diabetes	35	2.31
Hypertension	26	1.71
Typhoid	25	1.65
Hernia	25	1.65
Anorectal fistula	22	1.43
Angina	17	1.12
Cholecystitis	17	1.12
Gall stone	17	1.12
Myocardial infarction	15	0.98
Anemia	15	0.98
Piles	15	0.98
Peritonitis	15	0.98
Prostate hypertrophy	14	0.91
Gastritis	13	0.85
Ectopic anus	13	0.85
Intestinal obstruction	12	0.78
Malaria	12	0.70
Diarrhoea	11	0.71
Tonsillitis	10	0.65
Abdominal pain	9	0.58
Hemiplegia	9	0.58
Thalassaemia	8	0.52
Accidents	161	10.52

Dera Ghazi Khan, Sahiwal and Rahim Yar Khan.

Disease Prevalence

Though 130 diseases/abnormalities have been recorded yet the majority appear in very low frequencies. Different forms of carcinoma, accidents, liver cirrhosis, hyperthyroidism, renal failures, ulcers, kidney stone, tuberculosis, appendicitis and diabetes are relatively common (Table 4).

DISCUSSION

The present is a hospital based study, depending upon a relatively small sample (1533 patients) and collected over a brief period (February-September 1993) and hence provides a preliminary over view of the general pattern for hitherto unreported area. It must, however, be taken with caution as it does not reflect the general population of the area.

Biological Characters

A lower representation of the females (34.58% compared to 46.34% or 47.39% for Pakistan or Punjab, 1981 Census, Akhtar, 1992a) can not be explained on a lower vulnerability (many diseases specific to females only). This may indicate a low priority for females in health care, especially in low income groups. This may also reflect a greater endurance in females to fight disease without being expressed to other members of the family.

The statistics on age distribution available with Akhtar (1992a) suggest that adults (42.33% against 15.00%) and post adults (19.44% against 9.14%) bear a higher representation, while children (2.74% against 45.14%) have a lower representation. The young and old classes have almost equal representation in patients and the general population. A lower representation of children in a population with high infant mortality (10.77% Akhtar, 1992) suggests that children are not normally referred to larger hospitals. A greater health care is probably af-

forded in the society to adults and post adults, being in their prime age.

No information is available on distribution of blood group alleles in general population. The only other study available from the area (Mian and Bhutta, 1993) deals with the Multan city and hence is not directly comparable.

Social Characters

A low average per capita income, 94% of the patients falling in income classes below national average per capita income (Rs. 11,393 during 1992-93; Akhtar 1992a) and a significant negative correlation suggest that those who can afford are attracted towards the private hospitals/clinics. This is despite the fact that the general medical facilities are poorer and are being mainly catered by specialists of the Nishtar Hospital. This might suggest that the care afforded and the confidence enjoyed by the large government hospitals remain much below the desired level.

A lower representation of illiterates and those with below high school level of education and higher representation of undergraduates and postgraduates than that suggested for general population (illiterates 73.8%, high school 21.66%, graduate 4.1%, postgraduates 0.44%, Akhtar 1992a) can be expected under increasing awareness and economic status with education.

Comparing distribution of broad occupations with that in the general population of Pakistan (house ladies 23.06%, farmers 14.15%, labourers 6.85%, secretarial jobs 3.38%, business 3.30%, students 9.20%, indifferent 40.08%, Akhtar 1992a) suggests that house ladies, students and farmers have an identical distribution in patients and general population. Lower representation of indifferent individuals is caused by direct handling of children by general practitioners. A higher representation of labourers (2 times), secretarial jobs and business (3 times) can be attributed to greater awareness/access to hospital and job requirements.

Distance logic largely explains a higher representation of patients of urban and the geo-

graphic origins. No comparative data is available on martial status, smoking habit, disease history and ethnic origins for the general population of Pakistan/Punjab to suggest the importance of the present statistics.

Disease Prevalence

A hospital based study is useful in planning the future facilities in the hospital, but is handicapped in suggesting the absolute prevalence of the disease in general population. The results of such studies may provide some indicator of disease prevalence yet may be taken in right perspective.

ACKNOWLEDGEMENT

Authors feel indebted to Drs. Waseem Asif, Shahid Siddique and Imran Ahmad for help in collection of the data.

REFERENCES

- Akhtar, R. : *Pakistan Year Book*, 1991-92. East & West Publishing Co. Karachi-Lahore (1992a).
- Akhtar, N. : Incisional hernia in children. *Tropical Doctor*, **22** : 27-29 (1992b).
- Bacchus, R.A. and Bell, J. : Observation on diabetes mellitus among Arabs. *Pakistan J. Pathol.*, **3**:93-95 (1992).
- Emery, E.H. A. : *Methodology in Medical Genetics*. Churchill Livingstone, New York (1986).
- Mian, A. and Bhutta, M.A. : Genetic studies on human population of Multan (Pakistan) : Distribution of ABO and Rh blood alleles. *Pakistan J. Zool.*, **25** : 149-151 (1993).
- Negase, M., Tanimura, H., Setoyama, M. and Hikasa, Y. : Present features of gallstone in Japan. *Amer. J. Surg.*, **135** : 788-790 (1978).
- Stine, J.G. : *The New Human Genetics*. WCB Publishers, Iowa (1989).
- Toman, K. : Come desenmascara La tuberculosis. In : *Koch 100. Vencer la tuberculosis ahora o siempre*. Geneva (1982).
- Trotman, B. W. and Solway, R.D. : Pigment vs cholesterol cholelithiasis : Clinical and epidemiological aspects. *Amer. J. Digest Dis.*, **20** : 735-740. (1975).