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6-BIRD WOOD ROAD LAHORE, PAKISTAN

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**PAKISTAN JOURNAL OF HEALTH
COLLEGE OF COMMUNITY MEDICINE LAHORE**

EDITOR:

PROF. DR. SHAMIM RAZA BOKHARI
M.B.B.S., D. Bact (Lond) MS (Wisc, USA)
Head of Department of Bacteriology and Principal
College of Community Medicine,
L A H O R E

ASSOCIATED EDITOR:

DR. SYED ZAHID HUSSAIN BOKHARI
M.B.B.S. (Pb), M.C.P.S. (PAK)
M. PHIL (Pb, Gold Medallist)
M.R.S.H. (LONDON)
Assistant Professor
Department of Bacteriology
College of Community Medicine
Lahore

DR. SYED ABDUL RASHID,
MBBS., (Pb), M.Sc. (Hons)
Microbiology,
Assistant Professor Bacteriology,
College of Community Medicine,
Lahore

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EDITORIAL

RESEARCH ACTIVITIES AT THE COLLEGE OF COMMUNITY MEDICINE LAHORE

In the past few years the College has emerged as a centre of active research in the field of preventive medicine. The investigations being performed will go a long way in helping the country to march forward in achieving its goals of "HEALTH FOR ALL BY THE YEAR 2000."

Amongst these research activities the College planned a WHO Workshop on **HEALTH SYSTEMS RESEARCH** in which all its staff and prominent members of the health department participated. The College has performed a detailed study of **CHUNG** which brought to light the factors responsible for the non-utilization of the health facilities of the **CHUNG RURAL HEALTH CENTRE**. A similar study is now being performed in **BALUCHISTAN**.

An achievement of the college in the setting up of an urban and a rural field research centre. The rural centre is located in **CHUNG** 15 miles from Lahore and the urban centre in **Shah Jamal Colony Walton Road, Lahore**.

At **CHUNG** a T.B. free zone has been established. This will act as a model area for T.B. eradication. Two important research projects have been initiated to elucidate the mechanisms under-lying BCG immunization namely a study of cell mediated immune response in relation to B.C.G. vaccination immuno-conversion and efficacy of B.C.G. vaccination.

HEALTH EDUCATION is an important bridge between the health provider and the community and results in an awakening and desire in the public to improve its health status. Two Projects are being carried out namely :-

- Impact of Health Education against Tobacco use.
- A study for evaluation of Health Education programme regarding prevention and control of Tuberculosis in a rural community.

The College is performing a Sero-epidemiological survey for hepatitis B virus which revealed an astonishingly high prevalence in high risk groups.

An AIDS Research and referral centre is doing extensive work in surveillance of AIDS. It has been affiliated to the WHO-National Project for the Control of AIDS in Pakistan. The present reports of the centre indicate that the local population including the high risk groups are free of AIDS in Lahore. Occasional imported cases have been detected. The Centre's view is that vigilance is required in preventing introduction of the disease into the country.

Other research being conducted are :-

- Etiology specific diarrhoea in bottle fed and breast fed infants.
- A comparison of Imovax (Vero-rab) and PDEV (Berna) for the treatment of postexposure prophylaxis of rabies.
- Cross infection studies in Services Hospital.
- A sero-epidemiological study of association of delta agent with hepatitis B virus infection.
- A study of epidemiology of pulmonary tuberculosis in rural Punjab.
- A study of Brucellosis as an occupational Hazard.
- HbA1c - determination in healthy population with reference to age, sex, ponderosity, pregnancy and Hb concentration.
- Carriage of Enteropathogenic Bacteria by different species of Cockroaches.

PROF. DR. SHAMIM RAZA BOKHARI
MBBS (Pb); D.Bact (Lond);
MS(Wisc)
PRINCIPAL
College of Community Medicine
Lahore

PREVALENCE OF PULMONARY TUBERCULOSIS IN WORKERS OF COLONY TE TILE MILLS, MULTAN (1985-86)

By

*Prof. Dr. Ghulam Qadir Malik, M.D.,
MBBS., DPH., DCH., MCPS., FRSH (Lond.),
FRSTM (Engl.).

**Prof. Dr. Shamim Raza Bokhari,
MBBS., D. Bact (Lond.), M.S. (Wisc. USA)

***Dr. Syed Zahid Hussain Bokhari,
MBBS., MCPS., M.Phil (Gold Medallist),
MRSH (Lond.).

****Prof. Dr. Iqbal Ahmed Khan,
MBBS., MCPS., M.Phil.

*****Prof. Dr. Naseer Ch.
MBBS., M.Phil., Ph.D.,

INTRODUCTION

Everybody knows that tuberculosis has been taking a heavy toll of human life since dawn of history as soon as the man began to live in settled communities. Previously various names were given to this lethal disease e.g. "KILLER, WHITE SCOURGE, DEADLY PLAGUE, WILD FIRE and PHTHISIS CONSUMPTION", but with histopathological aids the "TUBERCULOSIS" has been named.

Tuberculosis causes more deaths than all other notifiable disease combined. Total cases of tuberculosis in the world had doubled in last three decades alongwith doubling of population. One report reveals that there are 20 million tuberculosis patients in the world with addition of 2-3 million new cases every year while 2 million die of tuberculosis every year in the world (Moscow XXIst conference (1971)⁶).

-
- * Professor of Community Medicine,
Nishtar Medical College, Multan.
 - ** Professor of Bacteriology and Principal,
College of Community Medicine, Lahore.
 - *** Assistant Professor Bacteriology,
College of Community Medicine, Lahore.
 - **** Professor of Pathology and Principal,
Quaid-e-Azam Medical College, Bahawalpur.
 - ***** Professor of Pathology,
Post-Graduate Medical Institute, Lahore.
-

In 1983 it was found that 4-5 million new patients of tuberculosis are appearing on the screen with mortality of two out of three sufferers, round 3 million every year. Around 10 million open cases are expectorating around the world and one person infects 20-25 healthy persons. So it is estimated that 40-50 million persons may develop tuberculosis and 2/3rd may die if kept unattended (Styblo 1983)⁵. Similarly it is predicted that 50-60% recover and become permanently non-infectious even if treated (J. Holm 1984)².

Morbidity rate in few developed countries in 1971 was as follow:-

USSR	29.1/1000	Inhabitants
U.S.A.	14.8/100	Inhabitants
France	19.6/1000	Inhabitants
Norway	13.3/1000	Inhabitants

(J. Holm 1971)

Tuberculosis is most of the developed countries is so controlled that found only in romantic novels and medicine museums as disease is brought into full control by big resources and using latest discoveries. It is reverse in our country where disease is rampant. Annual incidence of tuberculosis in Asia and Africa is 200-350 cases per 100,000 inhabitants (Chronicle 1975)³ while there mortality rate is 20-25 times more than European countries (Styblo 1983)⁵. Death rate in Latin America is 2 out of 1000 persons annually while 3-5 in Africa and Asia (Hutt 1971). The cases of tuberculosis are more in under-developed countries

(Malik G.O. 1983)²¹.

In Pakistan initially 10 lacs persons were suffering every year, with death of two lacs and loss of 170 crore rupees annually (Awan 1959)¹³. In 1970 mortality rate raised to 2.1 million i.e. 3% and morbidity rate to 100,000 deaths with loss of 250 crore rupees per annum. (The Doctor 1970)¹. Every year one lac persons get disabled by tuberculosis, majority in rural areas and 60% in working ages (The Doctor 1971)⁸. Incidence being 4-6% in 1974 (Najib et al. 1974)²², totally 33 lacs (Malik (G.O.)²¹. Prevalence of tuberculosis in Pakistan falls to 16 lacs with 68000 deaths in 1978 (Kalata Jan et al. 1978)⁴.

Factors like refugees, political unrest, wars and socio-economical depression all reduce the resistance of community and prolong the tuberculosis epidemics. 3 million Afghan refugees in Pakistan in 1978 had prevalence of 47.7% tuberculosis and are source of infection to locals as compared to locals with only 0.2% sputum AFB positive cases (Jafri 1984)¹⁸. Dr. Shamasul Arfeen compares his previous study of 1958 with that of 1978 after influx of Afghan refugees as follows :-

Year	AFB positive	X-Ray evidence of TB
1958	0.19%	4.2%
1978	0.3%	2%

Totally 240,000 persons are roaming

infecting others. Disease is often hidden due to attached social stigma and improper guidance by quacks.

Colony Textile Mills, Multan is one of the largest textile mills of the country. Present study has been designed to determine the prevalence of pulmonary tuberculosis in employees of the mill where most of the population belongs to low socio-economical bracket and work under adverse environments. Recent study has enabled us to bring out the ignored risk factors which increase the transmission and susceptibility of disease like poor employee-employer relationship, hard and prolonged physical work and physical and mental traumas, in addition to well known factors like poverty, inadequate housing, over crowding and delayed diagnosis.

As one study reveals that only 30% cases are diagnosed while 50% of diagnosed cases of tuberculosis are treated, 70% tuberculosis victims remain undiagnosed (Awan 1959)⁹ In USSR any person (if at all) presents in advance tuberculosis they try to find out the cause of late diagnosis. Such undiagnosed symptomatic cases become volcanos after getting worse and infect thousands of healthy persons. It is estimated that 95% new cases get disease from sick persons and others 5% from inhalation of infected dust. Exhaled bacilli remain suspended in air for 30 minutes to a distance of one meter. In Japan every tuberculosis patient is contagious to 10 healthy persons on an average contaminate for

2 years. 10% out of new contaminated persons get active disease (Challenge 1980)⁸ In the world on an average one person infects 15-20 healthy persons, 6 out of them get active tuberculosis i.e. 30% (S. Arfeen 1983)¹⁹ So early diagnosis save families and other vulnerable persons around, which later also face economical misery alongwith the nation, as crores of widows and orphans are left to lead a life of starvation, insecurity and fear, in addition to the burden of treatment expenditure.

AIMD AND OBJECTIVES

1. To find out total number of cases of tuberculosis in a given time in closed community of Colony Textile Mills, Multan relative to general population.
2. Early diagnosis of lethal disease.
3. To find out risk factors.
4. Health education of employees regarding :-
 - a. Maintaining good health.
 - b. Avoiding all detected risk factors.
 - c. Cares and precaution during the disease.

MATERIAL AND METHODS

As said "NO ONE IS FREE OF TUBERCULOSIS UNLESS EVERY ONE IS FREE" so we employed all available approved clinical and laboratory methods to find out the cases.

HISTORY OF

- (i) Contact at home, among friends,

colleagues, boss.

- (iv) Cough with expectoration.
- (iii) Fever.
- (iv) Haemoptysis.
- (v) Loss of weight.
- (vi) Loss of appetite.
- (vii) Addiction of:- Smoking of cigarette, Hoka, Naswar, others.

CLINICAL EXAMINATION

Thoroughly done and relevant positive findings recorded.

MANTOUX TEST (TUBERCULIN TEST).

Performed by using 5TU tuberculin stabilized by tween 80.0.1 ml injected intradermally on volar aspect of forearm and examined after 48 hours and categorized as follow :-

1. Negative If induration at the site of injection was lesser than 5mm.
2. ± If induration at the site of injection was between 5-9mm.
3. + If induration at the site of injection was between 10-14mm.
4. ++ If induration at the site of injection was between 15-19mm.
5. +++ If induration at the site of injection was more than 22 mm and with or without vesicle.

SPUTUM EXAMINATION

Done by collection morning expectoration of persons and search-

ed for acid fast bacilli (AFB) and classified as :-

- (i) AFB positive (open cases).
- (ii) AFB negative cases.

X-RAY CHEST

Done of following persons:-

- (i) Mantoux positive cases.
- (ii) AFB positive cases.
- (iii) Clinically assessed tuberculous patients.

X-Ray chest antero posterior view done and classified as below:-

- (a) No evidence of pulmonary tuberculosis.
- (b) M.L. (Mild Lesion) Lesion within two inter costal spaces.
- (c) M.A. (moderately advanced lesion) Lesion more than two inter costal spaces or cavity smaller than 4 cm diameter.
- (d) F.A. (Fairly advanced lesion) Lesion involving at least half of lung view or cavity larger than 4cm diameter.

OBSERVATION AND RESULTS

During the analysis of this study following observations were obtained :-

TABLE - I

Age group	Total	Positive cases	Percentage in total population surveyed.	Group percentage
10 - 19	88	7	0.79	7.95
20 - 29	288	42	4.74	18.34
30 - 39	197	51	5.76	25.28
40 - 49	170	41	4.63	24.11
50 - 59	127	22	2.48	21.25
60 - 69	18	4	0.45	22.22
Total:-	888	712		

So incidence of tuberculosis increasing with age, maximum risk at ages between 30-39 years.

TABLE - II

DISTRIBUTION OF SOCIO-ECONOMIC STATUS IN WORKERS

Class	Total workers	Positive cases	Percentage in total population surveyed	Group %age	Percentage
Upper class	-	-	-	-	-
Middle class	31	12	1.44	38.70	6.97
Lower class	798	160	19.2	20.05	43.03

So tuberculosis being a disease of middle class in addition to lower class people.

TABLE - III

TYPE OF DIET USED AMONG WORKERS

Type of diet used	Total workers	Positive cases	Percentage in total population surveyed	Group %age	Percentage
Good	9	1	0.12	11.11	0.60
Average	65	21	2.52	32.30	12.20
Poor	755	150	18.0	19.86	87.20

Table-III also supports the facts observed in Table-II proving tuberculosis afflicts to average and poor class people.

TABLE - IV
DISTRIBUTION OF ROOMS OCCUPIED BY WORKERS FAMILY

Number of Rooms	Total workers	Positive cases	Group percentage	Percentage
1	359	89	26.17	51.75
2	340	54	15.04	31.39
3	93	19	20.43	11.05
4	23	4	17.39	2.33
5	14	6	42.85	3.48

Tuberculosis is found most common in over-crowding and prevalence decreasing with increase of facilities of accommodation.

TABLE - V
DISTRIBUTION OF NUMBER OF WORKERS FAMILY RESIDENTS

Number of family members	Total workers	Positive Cases	Percentage in total population surveyed	Group %age	Percentage
1. Twelve	149	33	3.96	22.14	19.19
2. Eleven	134	29	3.48	21.64	16.88
3. Ten	80	21	2.52	26.25	12.20
4. Nine	98	18	2.16	18.36	10.48
5. Eight	89	15	1.8	16.83	8.73
6. Seven	76	15	1.8	19.73	8.72
7. Six	51	7	0.84	13.72	4.06
8. Five	34	8	0.96	23.52	4.65
9. Four	23	7	0.84	30.43	4.06
10. Three	29	7	0.84	24.13	4.06
11. Two	35	8	0.96	22.85	4.65
12. One	31	4	0.48	12.90	2.32

The prevalence is more in the thickly residing members, this decreases as the accommodation facility improves.

TABLE - VI

DISTRIBUTION OF VARIOUS TYPES OF ADDICTIONS AMONG WORKERS

Addictions	Total workers	Positive cases	Group percentage	Percentage in total population surveyed
i. Cigarette	492	102	21.878	0.87
ii. Hooka	32	7	20.73	12.24
iii. Naswar	6	2	33.33	0.24
iv. Any others	65	6	9.32	0.72
Nil	234	55	23.50	6.60

Maximum workers are using cigarettes, Hooka and Naswar comes next to it. All predispose to tuberculosis.

TABLE - VII

HISTORY OF CONTACT WITH TB PATIENTS AT HOME/AT WORKERS NEIGHBOURS IN 172 TT POSITIVE WORKERS

History of contact	Workers with TT positive	Percentage
Positive	4	2.32
Negative	168	97.68

History of contact found in minority of infected persons, perhaps hidden or not known due to lack of knowledge.

TABLE - VIII

DISTRIBUTION OF VARIOUS SYMPTOMS WITH DURATION OF MORE THAN THREE WEEKS IN WORKERS

Symptoms	Total workers examined	Workers with TT positive	Percentage
Cough with expectoration	475	130	54.95
Fever	68	28	41.17
Dyspnoea	111	21	18.91
Haemoptysis	28	3	10.71
Chest pain	38	10	26.31
Loss of weight	53	18	34.00

Fever being most alarming sign, symptoms of tuberculosis. In our series cough with expectoration and dyspnoea make most of the persons to see the doctor and were proved tuberculin positive.

TABLE - IX
DISTRIBUTION OF TYPES OF TT AMONG 172 WORKERS

TT reaction	Number of workers	Percentage
+	166	96.52
++	5	2.90
+++	1	0.50

Tuberculin positive cases in total population were 20.74% so mantoux test being most easy to perform, cheap and used as mass screening of tuberculosis.

TABLE - X
RADIOGRAPHIC CATEGORISATION AMONG TT POSITIVE CASES (172)

Category	Positive	Percentage among TT positive cases	Percentage population surveyed
1. Mild lesion (ML)	3	1.74	0.36
2. Moderately advance lesion (MA)	14	8.13	1.68
3. Fairly advanced lesion (FA)	10	5.81	1.20
4. With cavitation	3	1.74	0.36

3.60% in total population surveyed. Radiography is a reliable test for screening but expensive.

TABLE - XI
SPUTUM EXAMINATION

Persons examined	AFB positive	Percentage in total survey
829	2	0.240

So minority of cases are expectorating and descriminating the disease.

DISCUSSION

Inhalation of air polluted by particles capable of reaching alveoli reduce the resistance of lungs to diseases and convert the elastic lung into tough fibrous. Damages its functions, reduces oxidation process and makes the lungs more prone to infections, so hazards of chest infection are maximum in industries with polluted air.

Only one microscopic myco bacterium tuberculosis enters into livings and starts multiplication within one hour of entry, from a nodule of bacilli of five thousands within 10 days, when population of bacilli reaches one billion cavity appears. But detection of tuberculous bacilli, the acid fast bacilli (AFB) on microscope is very difficult. It is said that just one AFB can only be seen if ten fields of sputum smear are seen and 100,000 AFB per mill litre (ml-cc) of sputum are present similarly sputum examination is fruitful if done 14 days after the onset of cough.

Presence of AFB in sputum proves the open cases, these are contagious cases who involve the people in surroundings. Our research in Colony Textile Mills shows prevalence of only 0.24% AFB positive cases i.e. only two contagious cases out of 829 persons. It is nearer to the total population's prevalence in Pakistan, which was 0.19% in 1958 and 0.31% in 1978 (S. Arfeen 1984)¹⁰. Other researches reveal AFB positive cases in Pakistan as follows :-

2.8% i.e. 4/282 cases examined (Ismail et al. 1978)¹²

11171 AFB positive cases out of 95600 persons examined (Hussain M. 1984)¹⁴.

AFB positive cases among proved pulmonary tuberculosis patients are common in Pakistan. 41 AFB positive cases out of 1442 proved TB chest cases and 55 AFB positive cases out of 100,000 cases and 180,000 out of 1.1 million active pulmonary tuberculosis patients (Kalata J. 1978)⁴.

It is said that 10 million open cases are expectorating around the world (Styblo 1983)⁵ and further added that in most developing countries estimated number of smear positive cases of pulmonary tuberculosis existing on a given day (Point prevalence) is 100-150 per 100,000 and number of new smear positive cases developing each year 50-70/100,000, while 2/3rd of these are pulmonary tuberculosis cases (Holm J. 1984)².

It is advised to use tuberculin test as a mass test which is cheap, safe and administered without any complication and has ability to separate infected from non-infected persons. Becomes positive once lymphocytes of the body are sensitized to tuberculosis bacilli, even without any regional invasion. So tuberculin test is advised to do once a year of every body and has replaced radio graphic screening for tuberculosis so in the rest of our discussion we shall take tuberculin test as a reference test.

Our research in Colony Textile Mills, Multan reveals (Table-IX) 172 cases of tuberculin positive out of 829 persons processed with prevalence of 20.74%, 166 with induration at the site of injection upto 10mm after 48 hours of injection (96.52% of total positive cases). Five were ++ (induration upto 14mm) while just +++ (induration 20mm), prevalence among positive cases being 2.90% and 0.58% respectively. Unlike recent study done among medical staff and included only doctors and nurses shows prevalence of positive (T.T) cases 39.4% and 50.51% during first and second years of research respectively (Bukhari 1984)²³.

Radiographs of clinically suspected, AFB positive or tuberculin positive cases were taken and read by two experts each. Radiographs proved pulmonary tuberculosis in only 25 persons out of 172 tuberculin positive cases i.e. 18% and prevalence being 3.60% among the population surveyed in the mill. Moderately advanced cases 14, fairly advanced 10 cases being 1.68% and 1.2% of population of mill, mild cases were (3) 0.36% of mill inhabitants.

It is said that X-Ray method besides being of very low specificity is very costly in relation to its yield when used for indiscriminate mass screening as in one study 7000-12000 radiographs revealed one smear positive cases and radiographs of 50000 people sorted out only 7 new cases (Toman K. 1976)¹⁷. Radiographs proved pulmonary tuberculosis with pre-

valence of 0.43% out of 39.4% tuberculin positive cases in medical staff including doctors and nurses (Bukhari 1984)²³.

In U.S.A. radiographs of chest of every body is done after every two years after ages 13 years (Holm 1971)⁷. One claims that X-Ray lateral views is more important as enlarged glands in the chest form only radiologically visible lesion as was the case in 15% freiman et al. series (Rosen E.U. 1983)¹⁵. There are groups who advocated the use of radiographs of chest for mass screening. As Dr. Hushi of Social Security Hospital believed that so prevalent is the tuberculosis in atmosphere that were a miniature X-Ray test to be conducted mass in working classes 80% would be found sufferers (Lala Rukh 1984)¹³. In one study majority of registered cases were diagnosed on radiographic ground and seldom sputum supplementary examination was done 43000 persons were proved out of 181000 persons with prevalence of 24% (Hussain M. 1984)¹⁴. Dr. M. Mayer, Director, Royal TB Association, Neitherland surveyed most countries and found that 15% cases of tuberculosis can be diagnosed by radiography (Johs 1971)⁷.

As a whole cough with expectoration 475 cases with percentage of 53.45 was commonest complaint. 251 persons had this complaint out of 829 persons while 68(25.49%) were tuberculin positive. 224

persons had cough with expectoration problem, 66 being tuberculin positive with 29.46% prevalence among mantoux positive (172) cases. Weight loss comes next to fever which is 34% as 53 persons noticed it (14 persons TT⁺ positive). Least common symptom became the haemoptysis, 38 persons got it, 10 with Tuberculin positive, prevalence among mantoux positive 26.3%. Dyspnoea and chest pain comes in between above symptoms.

Prevalence of tuberculosis is said to increase with age in male than female except in children bearing ages (Rerchmann L.B. 1981)¹¹. Our work in Colony Textile Mills, Multan fully favours above findings (Table-I). As we investigated persons from ages ten years to 60 years. It further revealed that tuberculosis mostly (49.39%) involves ages between 30-49 years. 197 persons of 30-39 years were examined and 51 showed positive tuberculin reaction, incidence was 25.88%, while 24.11% among ages 40-49 years (41 positive cases). So ages of maximum involvement correspond with Awan's research who found that 30-40 years are most prone years alongwith puberty and menopause as resistance decreases due to increase life strains at working ages (Awan 1959)⁹.

Buttmbler (1980)² found 60% involvement in young ages. We found minimum prevalence (7.95%) at ages 10-19 years, 7 persons showed positive mantoux off 88 persons.

Our series proves that tuberculosis is not only the disease of low class people but also of middle

class people, tuberculin was positive in 12 persons out of 31 middle class people (38.7%) and 788 lower class people were examined, 160 (20.05%) had positive tuberculin response (Table-II). All favours world proved facts e.g. of Walter Israel 1980²⁸ and Harisons 1982²⁹

Similarly Table-III shows maximum prevalence among poor and average diet consumers 32.30 and 19.86% respectively and only 4.4% in good diet consumers (only one tuberculin positive cases among nine cases). So new thing appears that in addition to lower class poor living people, middle class, averagely nurished people are also commonly engaged in tuberculosis.

Table-IV also shows that majority (359 families) of workers had homes comprised of one room. Among them 89 persons showed positive tuberculin, majority being labourers hard workers. Among 93 families owners of three, rooms 19 (20.43%) had positive tuberculin and 4 (17.39%) out of 23 families of 4 room owners as revealed by Table-IV. Mostly due to cross infecions, reduced resistance again by many ways, poor diet, multiple pregnancies, abortions and deliveries of various causes all acts as fertile and. for tuberculosis alongwith non-hygenic atmosphere, illitrates and lack of health education favour observations of Park (1981)²⁶ and L.K. Sidney (1980)²⁷.

Majority (43.78%) of our families have 11-12 members and

tuberculin positive cases in Colony Textile Mills, Multan were 33 (22.14%) and 29 among 149 and 134 families of 11 and 12 members respectively. There are 31, 35, 76 families of 1, 2, 7 members with 4 (12.90%), 8 (22.85%) and 15 (19.73%) cases of positive tuberculin response respectively. So all above copes with previously proved fact of relationship between 30.43% is the prevalence amongst 11 members families over-crowding and tuberculosis.

Table-VI shows prevalence of tuberculosis among various addicts. Majority of positive tuberculin tests belong to cigarette smokers 102 out of 492 smokers with prevalence of 20.73%. Next to smokers non-addicts have prevalence of 23.50% as 55 persons have positive tuberculin among 234 non addict population. 6 persons are found using Naswar, 2 being mantoux positive, 33.33% prevalence. During our study health education was done explaining the hazards of addictions, isolation of open cases, preventive measurements of tuberculosis and rehabilitation of disables was done.

Table-VII shows history of contact at home, neighbours, among colleagues, friends, bosses, having old cough, proved tuberculosis. Only 4 persons among 172 persons of positive tuberculin response gave history of contact prevalence being 2.32%, other 168 had no

history of contact (97.68%). Unlike Rose et al. who found that highest incidence of tuberculosis infection occurs (46.4%) among house hold contacts with smear positive cases. Sources incidence of non house hold contacts of smear negative was 34%. Among persons exposed to a smear negative house hold contacts being 24.51% (Rose et al. 1979)²². In USSR 15% people give history of contact with tuberculosis persons (Joh's 1971)⁷.

WE WISH FOR GOOD HEALTH FOR ALL BY THE YEAR 2000

Keeping in view above good slogan of WHO we intend to control tuberculosis at our earliest. This can be easily managed if we keep our environmental sanitation upto the mark, try to educate our communities for using balanced food and act on golden principles of public health. Health education forms the most important knowledge to keep person healthy. This can only be achieved if the professional health educationists alongwith specialists in different fields, general practioners, social workers, teachers, politicians and Imams of Mosques cooperate and coordinate in this field.

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AN ASSESSMENT REPORT ON LO-LINE ROACH TRAP

BY

S. D. PARVEZ AND

DR: I. H. SHAH

INTRODUCTION

Very few efficient traps are available for collecting Cockroaches and still many workers prefer to catch roaches manually. Similarly control is attempted by chemical means even in situations like hospitals, bakeries, restaurants, kitchens etc. where insecticidal spray is undesirable. In our present study we tried to evaluate "Lo-Line Roach Trap" provided by World Health Organization for this purpose.

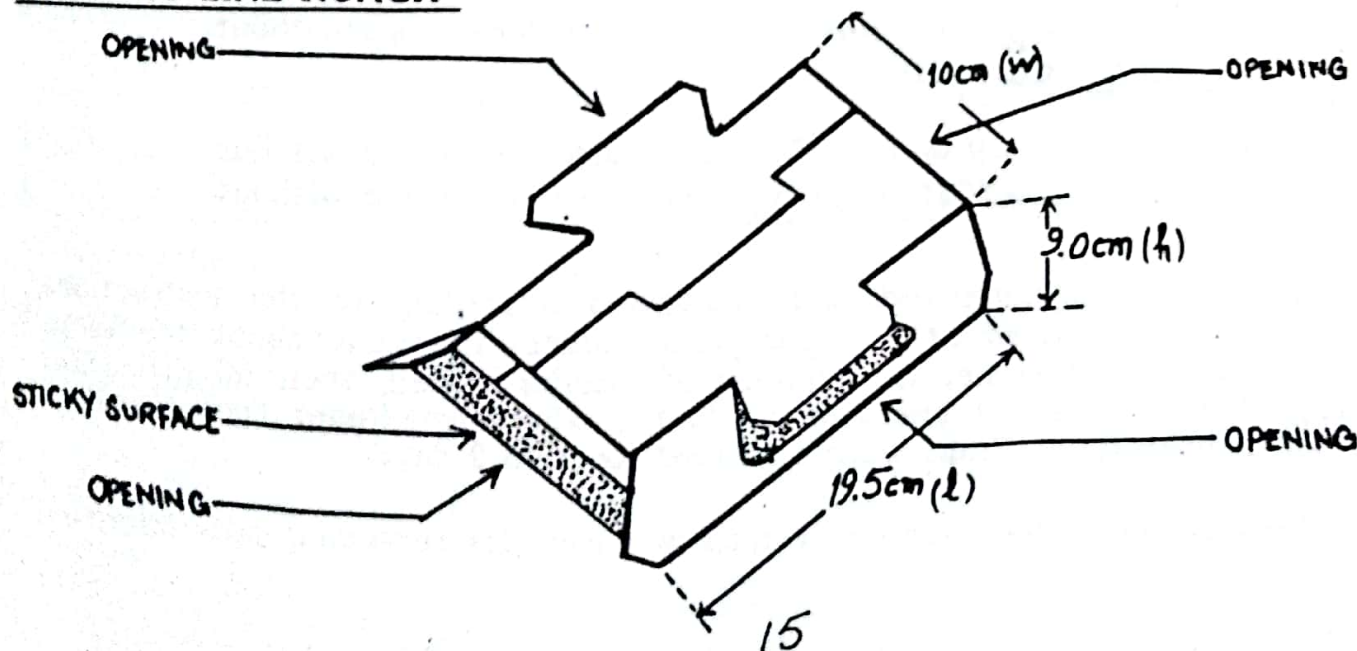
Comprehensive information on occurrence and prevalence of Cockroaches is lacking in Pakistan. However, its nuisance value and medical importance is realized and some workers have attempted to reveal the association of micro-organisms with particular species of cockroaches or in specific areas. For example, Zuberi, Qamar and others (1971), Razia and Jafri (1986), Soomoro, personal communication (1988). Therefore, we found it difficult to know prevalence, distribution, season and density of our local cockroaches.

MATERIAL AND METHODS

50 traps, by the name of "Lo-Line Roach" traps were provided by World Health Organization with a desire to evaluate their efficiency.

Each cardboard trap measures 19.5cm x 1 cm and 2.5cm high when positioned.

TRAP "LO-LINE ROACH"



Inside 19cm x 9 cm sticky surface provides entangling area for crawling insects. This trapping surface can be supplemented with lure tablets. Lure is prepared from pheromones, food attractants and Inert Carriers. This preparation is classified as "GRAS" in U.S.A. and its sale is approved as safe product. The whole trap is free of insecticide.

Details of the sites and locations of trap setting were as given below:

Type of Building	Location of Trap.	No. of traps with/without lure.
1. House-I	a. Bath room. b. Kitchen c. Bed room	One with lure. One with lure + one without. One with lure.
2. House-II.	a. Bedroom b. Kitchen c. Bed room	One with lure. One with lure. One with lure.
3. Hospital.	a. Kitchen b. Bathroom. c. Store (Food)	One with lure. One with lure + one without One with lure.
4. Bakery	a. Store b. Bathroom	One with lure. One with lure.
5. Restaurant.	a. Kitchen/Store b. Bath room	One with lure. One with lure.
6. Hostel.	a. Kitchen 2. Bathroom c. Living Room	One with lure. One with lure + one without. One with lure.
7. Sewer	a. Septic Gutter (Covered)	One with lure + one without.
8. Office.	a. Tea Room b. Lab./Office	One with lure + one without One with lure + one without.

Each trap was numbered and positioned according to the instructions printed on it and placed at an appropriate place. Everyday about the same time reading was taken i.e. the number of Insects trapped, their identification and any other remark. At one site we had maximum/minimum Thermometer to record temperatures. Traps were operated for 3 to 9 days.

Separate data sheet for every trap was used for recording daily information.

OBSERVATIONS/DISCUSSION

Table I
COCKROACHES OCCURRING AT DIFFERENT SITES
(29-11-1988 TO 13-12-1988)

Sites	Locations.	No of traps.	No of Cockroaches.			Total
			S.Longi	P.amri	B.ger	
House-I	Bath Room.	1	0	0	0	0
	Kitchen.	1+1*	7+1	2+0	1+0	11
	Bed Room.	1	0	0	0	0
House-II.	Bath Room.	1	0	0	0	0
	Kitchen.	1	0	0	0	0
	Bed Room.	1	0	0	0	0
Hospital.	Kitchen.	1	3	1	1	5
	Bath Room.	1+1*	0+0	0+0	0+0	0
	Store(Food)	1	2	1	0	3
Bakery	Baking Room.	1	13	4	1	18
	Store.	1	3	1	0	4
Sewer.	Gutter. (Covered)	1+1*	0+0	0+0	0+0	0
Hostel.	Kitchen.	1	7	0	0	7
	Bedroom.	1	0	0	0	0
	Bathroom.	1+1*	0+0	0+0	0+0	0
Restaurant.	Kitchen.	1	0	0	0	0
	Dining Room.	1	0	0	0	0
Office.	Tea Room.	1+1*	11+0	2+0	1+0	14
	Lab/Office.	1+1*	5+0	0+0	0+0	5
Total	19	19+6*	51+1	11+0	4+0	67
%			77.6%	14.42	5.98	100.00

*Traps without lure.

S.longi = *Supella Longipalpa*.
P.amri = *Periplaneta americana*.
B.ger = *Blatta germanica*

19 Traps with lure and 6 without were operated at seven different sites. Table-I shows the details of 25 traps' individual location and the number of cockroaches trapped in them.

42% traps with lure gave positive results whereas just one cockroach was trapped in one out of six traps which could be accidental. It was noticed that in very humid conditions (Sewer and bath rooms) no cockroach was trapped (5 locations) although in gutter and in one of the bath rooms cockroaches were seen running around.

In places like kitchen and food store houses where flour particles settled in high quantities on sticky surface of traps, it was noticed that it worked for three days only. Later on cockroaches were seen present but not trapped.

During our study period the season was cool (Maximum 18°C, minimum 9°C) and as a matter of general observation was not favourable season for cockroaches. However Supella longipalpa was most frequently found (77.61%) and then Periplaneta americana (14.42%) while Blaatta germanica was most infrequent in traps (5.98%). Warmer places were most productive.

Size and shape of the traps was found to be satisfactory for operation and installation was also simple.

Other Insects

Several other crawling/flying insects were also found sticking in some of the traps. Table-2 shows the details of the collections (excluding cockroaches) unidentified organisms are grouped in others.

Ants (Large black) Crickets and fruit flies (*Drosophilla*) were familiar domestic organisms while small bug/beetles like invertibrates were counted captured in the traps.

Most of them were seen sticking anywhere on the glued surface as against roaches which were mostly seen at the periphery.

Table 2

OTHER INSECTS COLLECTED IN TRAPS AT DIFFERENT SITES
(LAHORE, PAKISTAN), (29-11-1988 TO 13-12-1988).

Sites	Locations	No of traps.	Ants	Crickets	Fruit Flies.	Others.
House	Bath Room.	1	0	0	0	0
	Kitchen.	1+1*	9	3	0	0
	Bed Room.	1	0	0	0	0
House	Bath Room.	1	0	0	0	0
	Kitchen.	1	0	1	0	0
	Bed Room.	1	0	0	0	0
Hospital.	Kitchen.	1	0	2	11	3
	Bath Room.	1+1*	0+0	0+0	0+0	0+0
	Store(food)	1	3	5	7	7
Sewer.	Gutter.	1+1	0+0	0+0	0+0	0+0
Bakery.	Baking Room.	1	2	1	5	7
	Store.	1	7	4	3	3
Hostel.	Kitchen.	1	3	3	19	
	Bath Room.	1+1*	0+0	0+0	0+0	0+0
	Bed Room.	1	1	1	3	2
Restaurant.	Kitchen.	1	0	0	0	0
	Dining Room.	1	0	0	0	0
Office.	Tea Room.	1+1*	3	3	0	2
	Lab/Office	1+1*	3+1	1+1	0	2+1
Total		19+6	31+1	24+1	48+0	26+1

*Traps without lure.

52% traps yielded other insects some of them alongwith cockroaches and others were negative for cockroaches but some kind of insects. 31% traps were negative for cockroaches as well as any other insect. Out of these six traps, 4 were bathrooms, one in gutter indicating again that damp conditions adversely effect traps efficiency.

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HEALTH EDUCATION CUM MEDICAL SERVICE

Dr. AMIN A.M. GABIT.
M.B.B.S., D. Ac., Ph.D.

SYED AMJAD ALI JAFRI
M.A., M.Sc. Ph. D.

DR. HANIF A.K. SHIWANI
M.B.B.S.

PRESENT STATUS OF THE COUNTRY

PAKISTAN

INFANT MORTALITY RATE (1983) 120/1000

TOTAL POPULATION IN MILLIONS (1983) 96

ANNUAL NUMBER OF BIRTHS/INFANT & CHILD DEATHS (1983) 1000
4,018/733

GNP PER CAPITA (1983) US \$390

LIFE EXPECTANCY AT BIRTH (1983) (YEARS) 50

PERCENTAGE OF ADULTS LIFERATE MALE/FEMALE 1980-83 = 36/15

PERCENTAGE OF AGE GROUP ENROLLED IN PRIMARY SCHOOL MALE/
FEMALE 1980 83 = 57/31

COMMENTS

The high mortality and morbidity rates for children and mothers in Pakistan are caused by a few, largely preventable diseases and conditions. Hospital statistics from the provinces suggests that about 40% of infant deaths are due to diarrhoea and dysentery. Root causes of the tragic loss of infants and children include: the limited coverage and inadequacy of health services, the lack of knowledge concerning healthy living practices, insufficient potable water supply, and generally unsani-

tary living conditions.

Besides the diarrhoea and malnutrition, and the EPI related diseases i.e. Tetanus, Whooping cough, T.B., Measles, Diphtheria, Polio, the children also suffer other diseases. A preliminary data of selected 1500 children suggests the following incidences:

Skin problems	18%
E.N.T. problems	16.4%
Vision defects	15.2%
Psychological problems	12.8%

G.I.T. problems	8%
Lymphadenopathy	3%
orthopaedic problems	3.2%
N. Enuresis	2.5%
Genitourinary problems	1.4%
Cardiac problems	1.6%
Squint	1.9%
Hearing Defect	2%
Speech	3%
Dental problems	8%

HEALTH BUDGET

Approximately 214 million rupees are sanctioned for the year 1985-1986 for the Sind province.

The budget for the health education which is a built-in component is Rs. 3 lac for this year

DEFINITION OF HEALTH EDUCATION

According to Thomas Wood:

Sum of all experiences which favourably influence habits, attitudes and knowledge related to individual and community health.

IMPORTANCE OF HEALTH EDUCATION:

It is established that health programmes depend primarily on

The availability of the needed manpower services, proper management and logistics,

A properly informed and adequately motivated public

to utilize available services and to take active interest in the promotion of its own health.

Thus, an actively participating public is the main factor in health promotion and no success is practicable without direct and active involvement of people for whom the services are created

This can be accomplished only when there exists a systematic activity in the field of health education. Histories of epidemics abound with examples where adequate facilities and services were available but not utilized due to lack of information, inadequate motivation or due to cultural barriers which could have been overcome through proper education.

POLICY OF THE GOVERNMENT

The recommendations of the Working Group on Health Education states:

Health Education has been considered to be a number one priority because this is the most important vehicle for successful implementation of health services.

The Sixth Five Year Plan (1983-88) published by the Planning Commission, Government of Pakistan, October 1983 emphasises the need of Health Education in the following words :-

Health Education - The challenge of primary health care has brought to light the need for more dynamic health education, based not on teaching

people to utilize available resources as passive receivers, but on the fact that individuals, regardless of their level of education are capable of making suitable decisions in respect of their own health, when properly informed and motivated. The Sixth Plan will, therefore, incorporate health education as an essential element of health services. It aims at utilizing all educated females and women representatives of local bodies. Pesh Imams will be used as health educators, after short-term training for community education in preventive health programmes. Non-government organizations will be used to the extent it is feasible. An allocation of Rs. 50 million has been made for educative programmes, as a component of preventive health programmes.

Present Health Education Programmes:

The health education programme in Pakistan is picking up slowly and steadily. Now information and Education for Health (IEH), a new connotation for Health Education is being considered a basic pre-condition for the success of each and every health programme.

SPECIFIC TARGETS

1. Control of Diarrhoeal Diseases (C.D.D.).
2. E. P. I.

3. NUTRITION
5. MALARIA
5. PERSONAL HYGIENE
6. ENVIRONMENTAL SANITATION
7. M.C.H.
8. ANTI - SMOKING CAMPAIGN

ROLE OF INTERNATIONAL AGENCIES

A large number of international agencies are assisting the Government of Pakistan. Among these are FAO, ILO, UNESCO, UNICEF, WHO, ICAO, ITU, UPU, UNFPA, UNFDAC, UNIDO, NFP, UNHCR, UNDTCD, UNCHS, UNCTAD/ITC, IEA, WMO, IMO, UNEP, WTO, IBRD, USAID, CIDA etc.,

At present over 200 international personnel are serving under the UN flag in Pakistan, representing some forty-seven nationalities. A fairly large number of national staff is employed to assist the UN in carrying out its cooperation in development and humanitarian assistance.

Strategic objectives for social sector programmes around which UNICEF's cooperation has been designed during 1982-86 include reduction of infant mortality, maternal mortality, incidence of diarrhoeal diseases, infant and child mortality arising from the major communicable diseases, level of disabilities, enhancing literacy rate among women, increasing primary-school enrolments, reducing high drop-out rates, and increasing the earning capacities of women.

ROLE OF VOLUNTARY AGENCIES

Among the prominent voluntary agencies imparting Health Education in various forms at different levels are as follows :

1. Scout and Girl Guides Association.
 2. Pakistan Medical Association.
 3. Social Welfare Agencies through the Social Welfare Department.
 4. K.M.A. Project for the Health Education activities.
 5. T.B. Associations.
 6. Karachi Adventist Hospital.
 7. APWA
 8. The Agha Khan Foundation.
 9. Fahmi Health Education Centre.
 10. Bahais Health Education Project.
 11. Marie Adelaïd Leprosy Centres, Karachi, Hyderabad, Mirpurkhas, Sukkur, Larkana, and Nawabshah.
 12. Abdul Saïtar Edhi Trust, Karachi.
2. To conduct training programmes for people of various levels i.e. school teachers, workers, students, labourers, community people etc
 3. To educate the people of villages about primary health care and create awareness among the village masses.
 4. To assist, advise and to provide technical skills in all such projects on health and welfare which are being conducted by different agencies.
 5. To seek cooperation for promotions of health care knowledge from Govt. and various national and international agencies.

THE HEALTH COMMUNICATION GROUP

This is a group of qualified personnel working in the direction of achieving better health care for the masses. In the past they have conducted training programmes and achieved excellent results.

Their objectives:

1. To promote health education in the masses from grass-root level to the well advanced city dwellers.
2. Factors Identified:
90% people were unaware about :
 1. Proper schedules of Immunization.
 2. Lack of knowledge about preventive sides of communicable diseases.
 3. Inability to prepare O.R.S. at home.
 4. Unaware about proper Nutrition.
 5. Relative unawareness about

PILOR PROJECT

Community Survey

- a. A sample survey of 10,000 people was conducted to assess basic health awareness among the masses. A questionnaire was distributed in which simple questions were asked about health.

b. Factors Identified:

90% people were unaware about :

1. Proper schedules of Immunization.
2. Lack of knowledge about preventive sides of communicable diseases.
3. Inability to prepare O.R.S. at home.
4. Unaware about proper Nutrition.
5. Relative unawareness about

- advantages of breast feeding.
- 6. Neglected dental and oral hygiene.
- 7. Lack of proper knowledge regarding child care, pregnancy and family spacing.
- 8. Inability to meet common emergencies.

c. Approach

A project plan of action was prepared under the title of "Health Communication Training Course for teachers".

According to this plan 30 teachers are to be trained in one batch and 12 such courses are to be conducted in one year.

With these training courses, it will be advocated to the participants to impart knowledge to the students in their schools so that indirectly the families are to be involved.

If 30 teachers are trained in one month and if in a year 12 courses are conducted, 360 teachers from different schools will be benefitted. In return these 360 teachers will impart knowledge to 400 students in a year (it is supposed that each school is having 400 students, so 360 teachers from 360 school will benefit $360 \times 400 = 144,000$ students).

These students in turn will communicate the knowledge to their families and each family say consists of 5 members including the student so $4 \times 144,000 = 576,000$ will gain the health knowledge. Thus the Health Educa-

tion can be imparted to about 576,000 people in a year.

d. Pilot Programme I

Pre-course evaluation:

30 teachers were selected and were assessed by a multiple choice question papers which consisted of 50 questions on basic health. Only 3 teachers scored more than 50% marks, four teachers scored just 50% marks and the rest performed badly. (23% teachers were somewhat aware about preventive aspect of health).

The Course :

An extensive 32 hour duration course was designed which covered the following topics:

Theory : Consists of extensive and simplified lectures on the following topics :-

Immunisation, Communicable diseases, Diarrhoea and O.R.S., Nutrition, Breast feeding, Dental and oral hygiene, Basic health principles, Early detection and protection of cancer, Smoking, Environmental hygiene, Health problems in School Children, Child care and growth monitoring, care during pregnancy and family spacing, Management of bleeding, Breathing difficulties, Shock, Burns, Poisoning, Bites, Pains, Nervous ailments, Fractures.

Practicals: Pulse, Blood Pressure, Temperature taking, Bandages, Blood grouping, Fire fighting, Urine testing, Bleeding, Injections, Preparation of O.R.S., Methods of weighing.

Methodology :

Eminent Doctors were invited to deliver lectures and they in turn devoted their voluntary services as lecturers.

Teachers were asked to impart the required knowledge to the students

Teachers were given responsibility to produce assignments.

The students via the teachers were asked to write essays and prepare posters and models on health topics.

The families via students via teachers were sent informations on health.

Material used :

Printed lectures

Booklets

Posters

Slides

Pamphlets

Kits for practicals

Audio-visual aids.

Budget :

Total amount spent on programme I = Rs. 5,000/-

The expenditure was partly met by the Philanthropist and partly by the community people.

Post-course evaluation:

1. Teachers : Extensive theory and viva examination was conducted to assess the knowledge of the teachers. About 16 top most exami-

ners of various fields including UNICEF and Health Deptt., personnel were invited.

Result: 73% of the teachers were declared successful after the examination.

2. Students: Frequent classroom visits were made and simple questions on health were asked.

Besides essay writing about 300 posters were produced by the children.

3. Family: Besides frequent meetings, questionnaire was sent to the parents and the screening shows better health awareness.

4. Community: Frequent with community people suggests the motivation of the people and their urge to participate in such programmes.

CONCLUSION

At the completion of training the teachers are equipped and motivated to perform the following jobs to achieve the objective of this training :

a. Promotion of health and prevention of disease

1. They are able to assess general physical and mental condition of the students in their classes.
2. They are able to enlist the health priorities of the community.
3. They are able to deliver health education individually

or in groups.

4. They know the methods to meet minor emergencies.

b. Diagnosis and care

1. They are able to take care of sick students.
2. Administer prescribed drugs to the students.
3. Can refer when needed for more specialised care.
4. Perform simple tests like, urine and blood tests.
5. Can advise the parents regarding the health of their children.
6. Can provide emergency aid.

c. As planner and organiser:

1. Able to recognize the importance of health statistics.
2. Interpret findings and make recommendations.
3. Evaluate their own delivery

of health care for students.

4. Utilize health resources of the community for the students.
5. Organise competitions on health topics.

RECOMMENDATION

The successful outcome of this programme suggests that if the same method is adopted to impart health education, there are bright chances to improve the health status of the nation in shortest possible time and with minimum involvement of money and material.

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DENSITY OF ANOPHELES CULICIFACIES AND ANOPHELES FLUVIATILIS IN ISLAMABAD/RAWALPINDI AND ITS VICINITIES

ABDUL AZIZ, RIAZ, A. PAL & M.H. QAZI
Department of Biological Sciences
Quaid i Azam University,
Islamabad.

ABSTRACT

Surveys were conducted during October 1986 to September, 1987 for determining the prevalent anopheline densities in Islamabad - Rawalpindi and the adjacent areas. It was observed that An. culicifacies dominated from the third week of July onwards till beginning of December where as An. fluviatilis dominated from March onwards till second week of July. Other species were found less in number.

INTRODUCTION

So far 25 anopheline species has been recorded from Pakistan (Aslam Khan 1971). The principal malaria vector is Anopheles culicifacies Giles. An. stephensi also transmits malaria and is considered as of secondary importance. Suspected vectors in different parts of the country are An. fluviatilis, An. pulcherrimus, An. annularis, An. superpictus, An. subpictus and An. maculatus. Therefore there is a need to pay more emphasis on finding out the prevalent anopheline species, their density, breeding, resting and feeding habits and to find out the role they play in disease transmission.

Pal. and Abdul Aziz (1985) collected and identified seven species of anopheline mosquitoes during post monsoon season from Islamabad - Rawalpindi area. The species collected were An. culicifacies, An. Stephensi, Anopheles subpictus, An. annularis, An. fluviatilis, An. pulcherrimus and An. nigerrimus. They did not find any of these anophelines positive for sporozoites.

According to the reports of malaria control department Islamabad - Rawalpindi area which was under present studies has been described as hypoendemic for malaria (District Malaria Control Yearly Record 1980 - 86, unpublished). Rawalpindi region is being selectively sprayed but it 1981 Islamabad was made a separate district and thus the then Rawalpindi Communicable Disease Control Department stopped their activities in this area. Since the creation of new district, this area has not been sprayed with any of the insecticides and is heavily infested with both the anopheline and culicine mosquitoes.

METHOD AND MATERIALS

Noor Pur Shahan and Rawal

Dam were selected in Islamabad area and Dhamial, Tarnol and Rawat were selected in Rawalpindi area. Half of Rawat falls in district Rawalpindi and the other half in Islamabad. Anopheline mosquitoes were collected from houses, kitchens, stores and cattle sheds from these areas. An ordinary mouth aspirator and flash light was used for this purpose. The collections were made during day, when the mosquitoes were resting. These collections were transferred to paper cartons and brought into the laboratory. The mosquitoes were killed by freezing and were then identified. Surveys were conducted during June 1987 to May 1988.

RESULTS

Identifications of the collections made during June 1987 to May 1988 for knowing the prevalent anopheline species in Islamabad/Rawalpindi area for the purpose of bloodmeal and sporozoite detection revealed fifteen different species i.e. Anopheles culicifacies, An. fluviatilis, An. sergenti, An. stephensi, An. subpictus, An. superpictus, An. gigas, An. nigerimus, An. lindesayi, An. maculatus, An. splendidas, An. annularis, An. pulcherrimus, An. jamesi and An. barbirostris. These species were collected and identified from Noorpur Shahah, Rawal Dam Tarnol and Rawat in Islamabad-Rawalpindi area. Anopheles culicifacies and An. fluviatilis were found in high densities whereas the other species were found in less number. An. culicifacies dominated from the third week of

July onwards till beginning of December where as An. fluviatilis dominated from march onwards till second week of July. Bloodmeal and sporozoite detection will be dealt separately.

An. fluviatilis remains as dominant species during February to March and from August onwards it declined in population and An. culicifacies took this position till December. Man hour density was calculated with the formula:-

$$\text{Man Hour Density} = n \times 60\% t \times p.$$

where n = Total number of specimens collected

t = Time spent in minutes

p = Person involved

Man hour density observed for Anopheles fluviatilis and Anopheles culicifacies respectively was 9 and 5 in February, 21.1 and 19.6 in March, 45.2 and 16 in April, 23.8 and 4.6 in May, 11.3 and 3 in June and 26 and 13 in July. From August onwards the population of An. culicifacies was found as higher than that of An. fluviatilis. The respective man hour density of An. fluviatilis and An. culicifacies females was 15.7 and 34.3 in August, 19.8 and 54.6 in September, 16.3 and 41.2 in October, four and 19.5 in November and 3 and 8 females in December. In January no anophelines were found from collection efforts. Total number of mosquitoes in collections during different months differ because of difference in collection time, however the difference in population density is clearly indicated from the collections. During post monsoon malaria

transmission season considerably more time was devoted for these collections. November and December were colder than earlier months therefore time spent for these collections was comparatively about three times higher than

the other months.

Weather data was obtained from meteorological department. Average temperature, humidity and rainfall during the period under study is presented below:-

Month	Min. temp	Max. temp	R. H.		Rainfall
			0800	1700	
June	21.5	38.3	49	29.5	271
July	24.2	39.0	57	32	63.4
August	24.3	35.9	76	56	264.5
September	21.9	36.1	72	49	13
October	15.0	30.9	76	39	74.4
November	7.5	27.9	76	34	00
December	4.0	22.1	83	41	7
January	4.7	19.6	84	42	17.1
February	6.6	21.5	79	40	23.2
March	10.6	23.2	76	42	153.3
April	16.7	33.2	57	27	6.9
May	21.2	38.6	37	18	8.6

DISCUSSION

From the area under study thirteen different species have been recorded during June 1987 to May 1988. During post monsoon season of 1982 seven different species were recorded from the same area by the same investigator.

As described in the Table it has been observed that Anopheles fluviatilis remains dominated species during March to July and An. culicifacies from August to December.

MAN-HOUR DENSITY OF ANOPHELES FLUVIATILIS AND An. CULCIFACIES

Month	An. fluviatilis	An. culicifacies
February	9	5
March	21.1	19.6
April	45.2	16
May	23.8	4.6
June	11.3	3
July	26	13
August	15.7	34.3
September	19.8	54.6
October	16.3	41.2
November	4	19.5
December	3	8
January	00	00

Therefore more emphasis will paid to An. fluviatilis on it's potential as malaria vector in the area. Emphasis will also be paid on An. Stephensi which is the second malaria vector in the country. Since Anopheles fluviatilis is the dominating species during March to July there is possibility of this species as also playing it's role in malaria transmission. Faust and Russel (1957) has reported that at times of considerable importance in restricted areas every year one or more anopheline species enter into the category of malaria transmitters.

In this connection a separate study on sporozoite detection is going on and the findings will be published in a separate article. The said findings are therefore of great help in bloodmeal and sporozoite identification and conduc

ting further investigations on anopheline ecology and ultimately implementing vector control measures.

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EXISTING STANDARDS OF ENVIRONMENTAL SANITATION A SURVEY OF A KACHI ABADI OF NAWAZ SHARIF COLONY FEROZ PUR ROAD LAHORE

*Dr. (Capt.) SHAHID MAHMOOD,
M.B.B.S., D.P.H. (Pb).

** ABDUL HAMEED, M.Sc. (Biochemistry)

*** MUHAMMAD NAEEM, (ENGINEER)

INTRODUCTION

1.1 It is an established fact that most of the communicable diseases like Cholera, Dysentery, Diarrhoea and Gastro-enteritis etc can be introduced/eradicated through proper Environmental Sanitation.

1.2 The Katch-Abadi of Nawaz Sharif Colony is situated on Feroz Pur Road, Near Railway Crossing. This colony is a relatively new one because it has been shifted from old "China Basti" near Modal Town. The main occupation of the inhabitants is working as sweepers. Total population of the colony is approximately 3,000.

OBJECTIVES

To know the existing sanitary standards such as water supply, human excreta disposal, drainage and housing etc This would give an insight and serve as a base for future research in the field of Environmental Sanitation.

METHODOLOGY

The Nawaz Sharif Colony is divided into five blocks and different number of houses were visited in each block. A performance was prepared to record the findings for individual homes in which separate columns were made for various Environmental factors. Beside this door to door Physical survey, a mobile medical unit also visited the area, who was found to be sick and gave him medicine. Through this treatment it was also observed that what are common prevalent communicable diseases particularly due to poor Sanitation in the locality. All this work was done by the Department of the Environmental Health Sciences College of Community Medicine Lahore. All these observations were tabulated and charts were prepared.

OBSERVATIONS

4.1 Housing

80% houses are semi-pucca and

Department of Environmental Health Sciences,
College of Community medicine, 6 Birdwood Road, Lahore.

only 20% are made of well burnt bricks and pucca flooring. Floor level of all the houses are one foot above the street level so there is no chance that rain water or waste water (sewage) will enter the houses

Some of the houses are two room houses but mostly are one room houses. Ventilation of the houses is not so good and they are also not properly illuminated. Latrines and Kitchens are not properly constructed and in most of the houses cooking is done in the courtyard or in the living rooms.

The number of persons residing

in a house of one or two rooms is 5-6 (five to six).

4.2 WATER SUPPLY

Water supply is the katchi abadi is from WASA Tubewell. All the water distribution pipes are new and they are recently laid down. Water supply is intermittent.

Twenty water samples were taken from different points in the community. All the samples were examined for physical, chemical and Bacteriological testing.

All the samples were fit for human consumption bacteriologically, and chemically. The results of the tests are as follows :-

Sr. No.	Chemicals	Results	ppm.	Max. Permissible Limit.	PPM.
1.	Totals Dissolved solids	606---750	=	1,500	=
2.	Chlorides	35.2 -- 45.38	=	600	=
3.	Calcium	30---35.71	=	200	=
4.	Hardness	75---89.28	=		=
5.	Magnesium	26.57-29.32	=	150	=
6.	Sulphates.	209---480	=	480	
7.	Fluoride	0.2---0.3	=	0.50	=
8.	Electrical Conductivity.	$.35 \times 10^4$			
9.	pH	7.6---8.0	=	6.5--9.2	

4.3 Human Excreta Disposal.

All the houses have flush latrines which are connected to the sewer system laid and controlled by WASA.

4.4 Drains

There is no open drain in the streets. Rain water is also drained out by the sewerage system. Sewerage of the abadi is thrown into a Nala which passes through the abadi and is partially covered.

4.5 Streets

All the streets are straight and wide enough. Floor of the streets is made up of concrete.

4.6. Lighting

All the houses have electricity.

4.7. School

There is one junior school for boys and girls working in the abadi. A plot has been ear-marked for the school but at present this school is working in the open and teachers alongwith students are both facing the hardships of weather. Unfortunately most of the children of the abadi are not attending the school.

4.8 Health Status

During the survey six hundreds and forty seven (647) patients were examined for different ailments. It was observed that most of patients were suffering from such diseases which are due to poor persons and environmental hygiene e.g. Skin, G.I.T. Respiratory ENT diseases etc.

4.9 Social Status

Majority of the population belongs to low socio-economic class. Their diet living standards and educational standards are generally poor.

People are not worried about the proper dressing, education and other care of their family.

5. CONCLUSION

From the foregoing observation it can be concluded that the existing standards of environment sanitation are far behind the normal required standards. There are houses in which entire family of 5-6 persons resides in one small room. All the facilities which are to be provided by the government suitable water supply, sewerage system, electricity, flooring of streets are already provided by the government and plots are ear-marked for construction of dispensary; school and church etc.

But there seems to be no will amongst residents for the improvement and it is due to lack of awareness for the importance of personal and Environmental Sanitation for health.

The remedies could be :-

- i. Health Education.
- ii. Construction of School and Dispensary etc

These remedies are beyond the scope of this research paper.

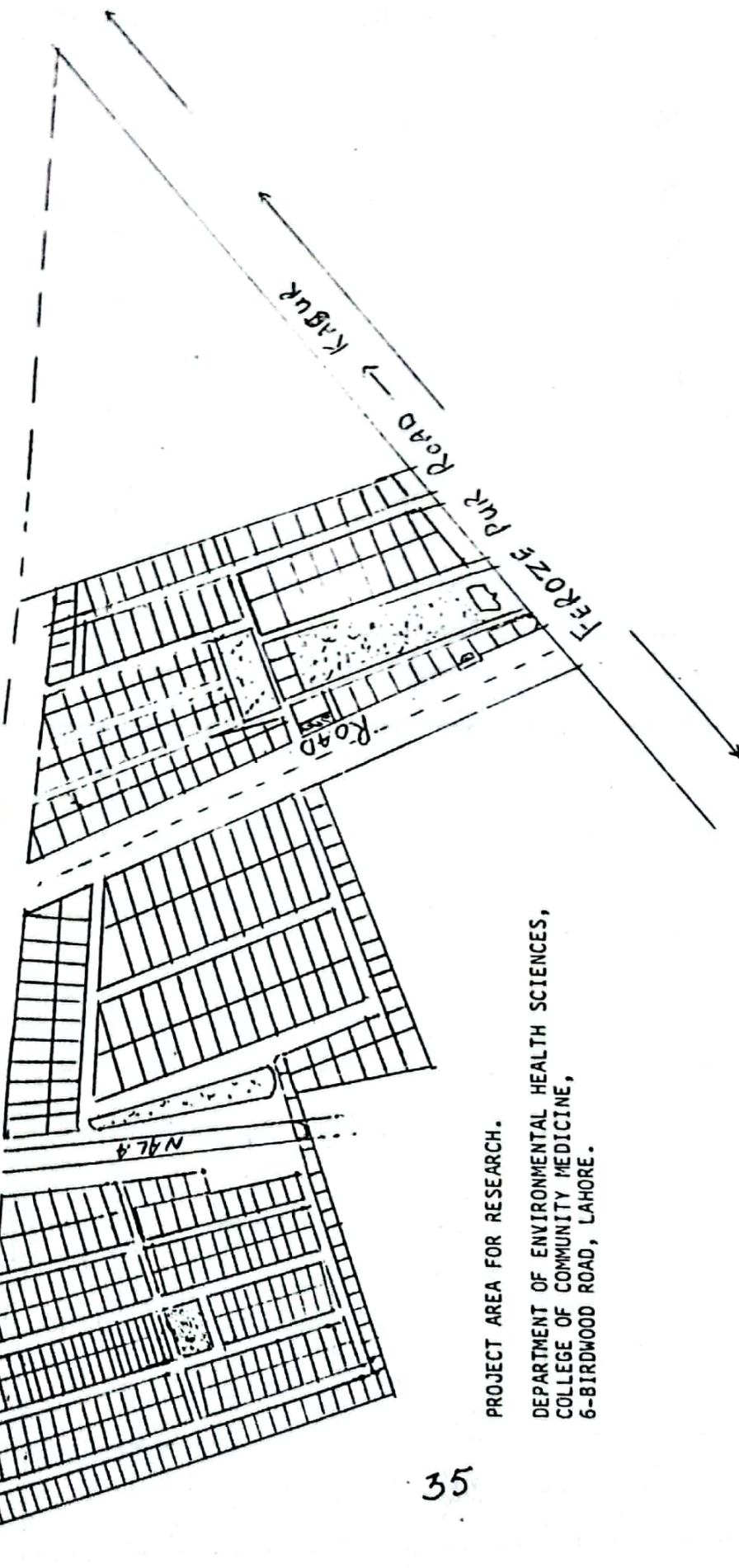
6. ACKNOWLEDGEMENTS

Thanks are due to the residents of Katchi Abadi Nawaz Sharif colony Feroz Pur Road, Lahore, who gave assistance on the spot survey. Thanks are also due to the staff of the Department of Environmental Health Sciences, College of Community Medicine, Lahore, who worked according to the instructions and helped in the collection of useful data.

LAYOUT PLANE OF NAWAZ SHARIF COLONY
 FEROZE PUR ROAD, LAHORE

RAILWAY LINE

Street 30 wide.



PROJECT AREA FOR RESEARCH.

DEPARTMENT OF ENVIRONMENTAL HEALTH SCIENCES,
 COLLEGE OF COMMUNITY MEDICINE,
 6-BIRDWOOD ROAD, LAHORE.

STATEMENT OF PATIENT EXAMINED DURING THE SURVEY

DISEASES	MALE	FEMALE	CHILDREN	TOTAL
E.N.T.	16	23	55	= 94
Eye	1	1	4	= 6
G.I.T.	11	36	27	= 74
Respiratory	37	31	49	= 117
Musculo-skeletal	35	76	39	= 150
Skin	39	25	98	= 162
Dental	4	5	4	= 13
P.U.O.	7	3	19	= 29
TOTAL	150	200	295	= 645

COMMUNITY ENVIRONMENTAL SANITATION SURVEY OF A KATACHI ABADI OF MAHAZ SHARIF COLONY FERROZ PUR ROAD, LAHORE.
CONDUCTED BY THE DEPARTMENT OF ENVIRONMENTAL HEALTH SCIENCES, COLLEGE OF COMMUNITY MEDICINE, LAHORE.

POPULATION				HOUSING			WATER SUPPLY		HUMAN EXCRETA DISPOSAL & DRAINAGE.			ROAD AND STREETS		LIGHTING.	
Block No.	ADULT	CHILD	TOTAL	KUCHA	SEMI-PUCCA	PUCCA	WASA	OWN SYSTEM	FLUSH	PARTLY FLUSH	CARRI-AGE.	KUCHA	PUCCA	ELECT-RIC.	K. OIL
A	105	66	171	--	20	9	29	---	29	--	--	--	29	29	--
B	106	77	183	--	30	5	35	---	35	--	--	--	35	35	---
C	15	7	22	--	3	1	4	---	4	--	--	--	4	4	---
D	84	65	149	--	20	7	27	---	27	--	--	--	27	27	---
E	23	26	49	--	10	--	10	---	10	--	--	--	10	10	---
F	14	12	26	--	3	1	4	---	4	--	--	--	4	4	---
TOTAL	347	253	600	--	86	23	109	---	104	--	--	--	109	109	---

APPLICATION OF ENZYME LINKED IMMUNOSORBENT ASSAY IN THE STUDY OF CATTLE BLOODMEAL OF ANOPHELINE MOSQUITOES

*ABDUL AZIZ, RIAZ, A. PAL AND M.H. QAZI

ABSTRACT

2538 anophelines of different species were tested for their bloodmeal source and it appeared that 53.74 percent of all different anopheline species tested had bovine bloodmeal. The studies are important particularly in source reduction approaches in planning an integrated malaria control program.

INTRODUCTION

Bloodmeal identification is an important tool in applied field research, epidemiological surveillance and malaria control programmes in the country. In most of the developed and some of the developing countries a newly developed technique, the Enzyme-linked immunosorbent Assays are being used for host bloodmeal in mosquito stomach. Modern research based on immunology and the development of good quality reagents has improved the specificity and economy in bloodmeal identifications and has resulted into simple ways in getting appropriate informations regarding mosquito hosts. Freshly collected,

dried or frozen mosquitoes can be utilized in these assays.

PROCEDURE FOR BLOODMEAL ELISA

After identification mosquitoes were cut from the middle of thorax and abdomen. Thorax plus head were preserved separately in small 1.5 ml plastic vials for sporozoite detection and abdomen was used for bloodmeal identification.

1. 15 ml disposable plastic vials were labelled with a marker for adding Bovine immunoglobulins. 20 ul of affinity purified monoclonal antibodies to bovine immunoglobulins (Kirkgaard and Perry, Gaithersburg, Maryland) were added separately into 10 ml of PBS and were mixed by shaking the tubes. pH of coating solution (PBS) was 7.4. This suspension was then added into a sterilized petri dish and with the help of multichannel pipette 100 ul of this suspension was added into each well of the microtitration polyvinyl chloride plates and the plates were incubated overnight at room temperature.

* Department of Biological Sciences,
Quaid-i-Azam University, Islamabad.

2. Next morning the contents were thrown out carefully, plates were dried with the help of kimwipes disposable wipers and all the wells were completely filled with blocking buffer (1.5% Gelatin in PBS pH. 7.4) to block the remaining sides of the plate wells. The plates were incubated for 30 minutes at room temperature, emptied and dried.

3. 100 ul of diluent (1.53 Gelatin in PBS pH. 7.4) was added into each well. 10 ul Mosquito abdomen suspension already ground in PBS T2O was added in each well of pvc plates except blank, negative and positive controls. In positive control bovine serum was used and nothing was added in the negative controls and blank. Well A1 was kept as blank. B1 to D1 wells as negative controls and wells E1 to H1 were kept as positive controls. Then the plates were incubated for two hours.

After two hours plates were washed thrice with PBS T2O. Washings were done with the help of multichannel pipette. Wells were filled with PBS T2O, left for 2 to 3 minutes, emptied, then again filled and emptied. After 3 washings the plates were dried by using kimwipes disposable wipers.

5. 12.5 ul of peroxidase labelled affinity purified monoclonal antibody to bovine was mixed in 10 ml diluent and 100 ul of each were added in each well and incubations were done for one hour. All the above incubations were done at room temperature.

6. After one hour the plates were washed thrice with PBS T2O and then dried.

7. The substrate solutions, 2,2 - azino - di - (3 - ethyl) - benzthiazoline sulfonate and hydrogen peroxide were mixed in 1 : 1 ratio and 100 ul was added in each well.

8. Results were observed visually and with the help of Dynatech Microelisa reader at 405 nm after 30 minutes.

The above quantity of reagents required for better results was determined by trial and error method and confirmation of results was done by doing dipstick elisa.

RESULTS AND DISCUSSION

For taking these observations cut-off value was calculated for separating the positive results from negative ones. For this purpose arithmetic mean and standard deviation of 3 negative controls was calculated and the mean was then multiplied with 3 standard deviations (Carlos et al 1984, Beier et al 1987). Any value above mean plus three standard deviations plus - 0.1 was thus considered as clear positives.

2538 anophelines of different species were tested for their bloodmeal source. 1370 Anopheles culicifacies were tested separately for bovine blood source and 687 gave positive reaction to bovine IgG. This means that 50.14% Anopheles culicifacies had taken bovine bloodmeal. Elisa absorbance values are given in the table. The results showed that many of the

An culcifacies were good positives recorded as above 1.00
and the optical densities were

OPTICAL DENSITIES OF BOVINE POSITIVE SAMPLES

V 0.5	.50-.75	.75-1	1-1.25	1.25-1.5	1.5-1.75	1.75-2	Over
<u>An. culcifacies</u>							
33	15	48	99	148	110	66	168
<u>An. fluviatilis</u>							
25	23	57	88	105	97	41	80
<u>An. stephensi</u>							
9	4	9	5	20	18	9	13
<u>An. subpictus</u>							
00	2	00	1	2	3	1	00
<u>An. nigerrimus</u>							
1	00	00	00	00	00	00	00
<u>An. superpictus</u>							
00	1	00	00	1	00	1	2
<u>An. maculatus</u>							
00	1	00	3	00	00	1	8
<u>An. anularis</u>							
00	1	02	1	2	4	00	3
<u>An. sergenti</u>							
00	1	3	00	00	00	00	1
<u>An. splendida</u>							
1	6	6	6	3	5	00	1

BOVINE POSITIVE MOSQUITOES

Species	Mosquitoes Examined	Positive	Percentage
<u>A. culicifacies</u>	1370	687	50.15
<u>A. fluviatilis</u>	834	516	61.87
<u>An. stephensi</u>	175	87	49.71
<u>An. subpictus</u>	24	9	37.5
<u>An. annularis</u>	19	13	68.42
<u>An. maculatus</u>	23	13	56.52
<u>An. superpictus</u>	12	5	41.67
<u>An. sergenti</u>	14	5	35.71
<u>An. splendidas</u>	62	28	45.16
<u>An. nigerrimus</u>	5	1	20.00
Total	2538	1364	

Average positive percentage of all anophelines = 53.74%.

Total number of Anopheles fluviatilis tested were 827. 516 to bovine IgG. This means that 61.87 percent were positive to bovine IgG. 175 An. stephensi were tested and 87 were found as positive to bovine blood source. This gave a percentage of 49.71. 24 specimens of An. subpictus were tested and 9 were found as positive for bovine blood which gave a percentage of 37.5. 19 An. annularis were tested and 13 were found as positive for bovine blood source which gave a percentage of 68.42. An. maculatus tested were 23 and 13 out of these were positive giving a percentage of 56.52. 12 An. superpictus were tested and 5 were found as positive giving a percentage of 41.67. 14 An.

sergenti were tested and 5 were positive for bovine blood giving a percentage of 35.71. An. splendidas tested were 62 and positive out of these were 28 which gave 45.16 percent specimens as positive to bovine blood source. 5 An. nigerrimus were tested and only one was found positive giving 20% bovine blood percentage.

The tests were performed on the collections available in different times of the year and therefore some of the species tested are very small in number. When an overall average percentage was calculated it appeared that 53.74 percent of all different anopheline species tested had bovine bloodmeal. The tests for human blood source were also conducted and the results are being analysed. Out of human tests it was observed that 9.73

percent feedings of *An. culicifacies* were on humans and 13.78 percent feedings of *An. fluviatilis* were also on human hosts. The studies are very help in planning malaria

control programme in the area and particularly in source reduction approaches in planning an integrated malaria control program.

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THE ROLE OF DIETARY FATS AND OILS IN HUMAN NUTRITION

*DR. IFTIKHAR ALI RANA

Fat provides a convenient and concentrated source of energy. There are over 40 fatty acids

found in nature. Dietary fat is important for the following reasons as show in Table I

TABLE - I
IMPORTANCE OF DIETARY FATS AND OILS

-
- (i) As a source of energy:
 - (ii) For cell structure and membrane functions:
 - (iii) As a source of essential fatty acids for cell structures and prostaglandin synthesis:
 - (iv) As a vehicle for oil-soluble vitamins:
 - (v) For control of blood lipids.

In addition, fat contributes to the palatability of food and is thus important in cooking and food processing.

Fats are probably not an essential constituent of diet except for providing essential fatty aide (EFA) and for the transport of fat soluble vitamins and especially the provitamins such as carotenes. There are three EFAS i.e. linoleic acid, linolenic acid and arachidoinc acid. Linoleic acid and linolenic acid are found in abundance in vegetable oils e.g. corn oil, cotton seed oil and sunflower oil. Arachi-

donic acid is formed in the human body from linoleic acid and linolenic acid. EFA are the precuresors of prostaglandins in the body. Vegetable oils and fish oils are rich in polyunsaturated fatty acids. Indices of thrombosis e.g. platelet stickiness are reduced on polyunsaturated fatty acid (PUFA) rich diets in rats and humsn subjects (1). This is possibly mediated through prostaglandin E which inhibits

* Food Technology Research Laboratories,
National Agricultural Research Centre, Islamabad

platelet stickiness. PUFA appear to be absorbed more efficiently than saturated fats of the same chain length and thus may be of help in the dietetic management of steatorrhea. Medium chain triglycerides (MCT) are fractionated from the coconut oil and consist mostly of eight and ten carbon fatty acids. They are hydrolysed more easily by pancreatic lipase than other triglycerides and after absorption go direct to the liver in the portal vein as free fatty acids. Patients with steatorrhea absorb MCT Much better than other fats and these are a valuable source of energy for such patients. Arachidonic acid has recently been shown to prevent gastric mucosa injury by ethanol (2). Recent studies in rats have shown that increased dietary linoleic acid counteracts salt induced hypertension possibly through changes in prostaglandin metabolism (3, 4). These data are strengthened by a number of studies with humans (5-7), but need further confirmation (8). A recent study of the statistical data on mortality from cirrhosis and dietary factors suggests that

saturated fats and cholesterol may protect against cirrhosis of the liver whereas polyunsaturated fats promote cirrhosis (9).

Mitra (1942) made a study of the dietary habits of the Hos, an aboriginal tribe in Bihar (10). He investigated 250 families and found that 200 made no use of any kind of fat for cooking. The total daily fat intake was estimated from 2.4-3.8 g/head/day which could provide at most 2% of energy but might contain about 1 g. of EFA. This population did not suffer from any disease or symptom which could be attributed to fat deficiency. Linoleic and linolenic acids are required for the normal growth and function of all tissues.

EFA DEFICIENCY

The most common description of EFA deficiency symptoms has been obtained from studies in young rats. These are described in Table 2.

TABLE - 2
ESSENTIAL FATTY ACID DEFICIENCY SYMPTOMS

Symptoms
Reduced growth rate
Abnormal skin conditions: Scaliness (Parakeratosis) dermatitis increased water loss

Sterility in males and females

Kidney abnormalities:
papillary necrosis and haematuria
renal hypertension

Mitochondria:
abnormal swelling of mitochondria,
abnormal mitochondrial function causing decreased
food efficiency

Decreased capillary resistance and increased
fragility of erythrocytes

Increased water consumption

Biochemical abnormalities:
decreased prostaglandin biosynthesis resulting
in a significant reduction in physiological
functions of tissue, such as the heart,
platelets, adipose tissue

Increased susceptibility to infection

EFA DEFICIENCY IN HUMANS:

The classical studies by Hansen et. al (11) on EFA deficiency in infants and children with various skin disorders showed a curative effect on intractable Eczema in many patients when the diet was supplemented with lard, maize oil or linseed oil. Although EFAS have not proved general cure for eczema, these experiments suggested the essential nature of EFAS for humans. In a subsequent study (12), with human infants using diets containing 0.1 to 7.3% of energy as linoleic acid, dermal changes were not observed at 1% or more of energy as linoleic acid. In recent years fat free intravenous infusions have been

shown to induce EFA deficiency in humans. Tanphaichitr and Chaiyaratana (13) found that the serum lipids of pregnant women in the Ubol province of Thailand contained less linoleic acid, linolenic acid and arachidonic acid than did lipids from Bangkok non-pregnant women. These values for the pregnant women showed a poor EFA status which became worse 6 weeks after delivery. Furthermore EFAS are probably necessary for the healing of surgical wounds (e.g. in intestinal resections), in the healing of enterocutaneous fistula and in severe burn cases.

Although a specific deficiency of linoleic acid has not been observed in humans or rats, experi-

mental evidence with rats indicates that this fatty acid has a specific role in the development and function of brain and retina.

EFA REQUIREMENT

For the human infant a dietary intake of at least 3% of energy as linoleic acid can be considered adequate. However this level is significantly lower than in human milk (6-7%). For human adults, a dietary intake of at least 3% energy as EFA is recommended. However many factors are known to increase EFA requirements. Moreover in populations with a high incidence of atherosclerosis as ours, much higher amount of EFA may be required. EFA requirements are higher in pregnancy and lactation and the recommended minimum intake is raised to 4.5% and 5.7% of energy respectively.

The fatty acid composition (g/100g of dry matter) of Pakistani cooked diet (14) is shown in Table 3.

46

Diets	Lauric acid	Myristic acid	Palmitic acid	Palmitoleic acid	Stearic acid	Oleic acid	Linoleic acid	Linolenic acid
National diet	0.00	0.04	1.48	0.05	0.16	0.99	0.80	0.09
1. Wheat bread, meat-potato	0.02	0.09	0.94	0.11	0.37	2.92	1.50	0.11
2. Wheat bread, Bengal gram (dhal)	0.01	0.06	2.73	0.00	0.26	2.41	1.67	0.09
3. Wheat bread, spinach-potato	0.01	0.06	2.84	0.07	0.28	1.32	0.83	0.13
4. Wheat bread, green peas-potato	0.01	0.07	2.64	0.06	0.29	1.79	0.98	0.10
5. Wheat bread, beans	0.01	0.07	3.39	0.00	0.31	2.64	1.77	0.21
6. Wheat bread, mustard leaves, skimmed milk	0.01	0.08	3.32	0.00	0.32	2.51	1.55	0.18
7. Wheat bread, ghee, sugar, skimmed milk	0.01	0.06	2.73	0.00	0.26	2.15	1.38	0.11
8. Rice (boiled), lentils	0.01	0.06	5.58	0.00	0.55	4.71	2.12	0.24
9. Rice (boiled), sugar, milk	0.00	0.02	0.21	0.00	0.03	0.14	0.15	0.01
Northern area diet	0.00	0.04	1.50	0.00	0.15	1.13	1.06	0.16

Thus the National diet contains essential fatty acids at 0.89% of dry matter or at 1.77% of energy intake. This is below the minimum recommended intake for infants, children and adults and much lower than the minimum recommended intake for pregnancy and lactation. It has to be remembered that the National figures are average figures for the whole population and a significant proportion of the population may be consuming much below these figures, while the middle and upper income groups may be consuming more fat than is desirable.

INTERACTIONS BETWEEN EFAS AND OTHER DIETARY CONSTITUENTS

1. Saturated fats increase the requirements for EFAs as measured by growth, dermal symptoms of deficiency. The magnitude of this effect is small.
2. Cis-mono unsaturated acids present in olive oil and animal fats partially replace EFAS in the lipids of EFA-deficient animal and humans. They also suppress the level of EFA utilisation when present at high dietary levels.
3. Positional isomers of oleic acid occur in small amounts in partially hydrogenated edible oils. For a given enzyme or biological system some of these isomers are good substrates while other are not so. Most of the fatty acids occurring in natural fats and oils are cis-fatty acids. The cis-isomers have the

substituents on the same side of the carbon atoms forming a bond, while the trans isomers have the substituents on the opposite sides of these carbon atoms. Trans-isomers of unsaturated fatty acids are formed during partial hydrogenation of oils and are also present in ruminant fats.

Transmonounsaturated acids increase the EFA requirement in animals even at moderate levels in the diet.

4. The dietary fat composition controls the metabolism of polyunsaturated fatty acids and thus the metabolic activity on intr-cellular membranes containing them. Thus low concentrations of a linolenic acid are very effective in suppressing the metabolism of linoleic acid. Moderate levels of linoleic acid inhibit the metabolism of α -linolenic acid. Oleic acid suppresses the metabolism of linoleic acid only at higher levels of the former.
5. Increased serum cholesterol accentuates EFA deficiency, probably by depleting the EFA pool available for phospholipids. Dietary EFAS are effective in reducing serum cholesterol levels.
6. Carbohydrates may replace EFAS in the diet. The nature of the carbohydrate has little effect on the development of EFA deficiency. The signs are traceable to lack of EFAS rather than to abundance of sucrose.

7.. In animals and man, Zinc and EFA deficiencies show similar pathologies. Recent studies suggest that zinc deficiency results in decreased synthesis of arachidonic acid from linoleic acid (15).

EFA deficiency was induced in humans by long term intravenous feeding with fat free preparations containing glucose whereas glucose free preparation did not induce a deficiency. The constant infusion of glucose without EFAS inhibits their release from adipose tissue due to increased insulin levels, so that the reserves of EFAS are unavailable. Under these conditions EFA deficiency is detected within a week. The abnormal metabolism of lipids and carbohydrates in diabetes also involves EFAS. Experimental diabetes accelerates EFA deficiency and fatty acid patterns of serum lipids of diabetics are modified in the direction of EFA deficiency.

Vitamin E protects the EFAS in body tissues against peroxidative loss. Since increased intake of EFAS generally increase the tissue content of poly-unsaturated fatty acids, there will be an increased need for vitamin E as observed in the premature infant. Vitamin E also stabilises vegetable fats against rancidity during processing and storage and thus prevents the loss of EFAS in those fats.

Diets with a very low energy density may be too voluminous to permit consumption of an amount sufficient to meet energy require-

ments particularly in children. Diets based on root crops and cereals fall into this category. Increasing the energy of such diets by addition of fat or by increasing the availability and consumption of those foods which are good sources of fat should be beneficial in such areas.

With light or moderate exercise, of an intermittent nature, the proportion of fat and carbohydrate in the diet has no effect on performance. However in sustained activity near the maximum workload, carbohydrate is almost exclusively utilised. Under such extreme conditions, high carbohydrate/low fat diets are desirable to maintain blood sugar levels. At lower workload, a more balance intake of carbohydrate and fat is satisfactory. There seems to be little evidence of any effect of the source of dietary energy on industrial work performance provided total energy needs are met.

There is no substantial evidence that climatic factors, particularly temperature, leads to changes in preference for the amount of dietary fat.

Under conditions of inadequate breast milk secretion, the early introduction of supplementary feeding to infants assumes paramount importance. There are two alternatives: (1) bottle feeding of milk and/or formulated foods and (2) administration of locally available food mixes prepared as thin gruels that can be spoon-fed. Whichever system is chosen, an energy content of around 50-60 Cal/g of protein should be aimed

at. The addition of fat is essential under either alternative. Small, severely malnourished children tolerate up to 70% of energy as fat even in the presence of partially impaired fat absorption.

Diets of children in several developing countries provide between 10-15% of energy as fat and the energy deficit in children consuming such diets varies from 20-30% of recommended allowances depending upon age. This deficit should be covered in part by additional amounts of added fat and in part by an increase in the quantity of diet being consumed.

DEEP FRYING OPERATIONS

Oils commonly used in deep frying processes are vegetable oil such as groundnut, sunflower seed and rapeseed oils. During deep frying peroxides and polymers are formed. Some polymers are not absorbed by the body and are thus simply wasteful in energy terms but other cyclic products are likely to be harmful to health and require careful study.

HEALTH IMPLICATIONS OF BRASSICA OILS

The most characteristic feature of these oils is the presence of erucic acid amounting to 20-55% of the total fatty acids. In addition these oils contain about 10% 11-eicosenoic acid. These two long chain fatty acids are not present in appreciable amounts in other vegetable oils used for human consumption. Through plant breeding the content of erucic acid and 11-eicosenoic acid have

been lowered to close to zero in some varieties of rapeseed.

The short term dietary intake of brassica oil with a high percentage of erucic acid causes transient diffuse myocardial lipidosis (fat deposition of the myocardium) in several animal species. The accumulation of triglycerides in rat heart reaches a peak after about one week and falls to almost normal levels by four weeks despite continuous feeding of the dietary fat. This accumulation is directly proportional to the amount of erucic acid in the diet.

In some laboratories long term feeding of brassica oils low in erucic acid has resulted in increased necrotic lesions in the myocardium above the background level but the severity was less than that found with high erucic acid rapeseed oil. Partial hydrogenation reduced the cardiopathogenicity of low erucic acid rapeseed oil.

At present there is considerable controversy about the etiology of long term lesions in test animals on low erucic acid brassica oils.

Three theories have been proposed:

1. The lesions are the effects of erucic acid still present in the oils.
2. The nontriglyceride part of the oil may contain a cardiopathogenic component.
3. There is imbalance in the fatty acid composition which is not tolerated by the cardiac tissue.

HEALTH IMPLICATIONS OF LONG CHAIN FATTY ACIDS IN MARINE OILS

In some countries partially hydrogenated marine oils (PHMO) have been consumed as a component of margarine and shortening for over 50 years.

Cardiac lipidosis can be induced in some experimental animals by continuous feeding of PHMO containing high proportions of docosenoic acid in a high fat diet and is related to the concentration of docosenoic acid in the diet. Although these effects are qualitatively similar to those of high erucic acid rapeseed oils but quantitatively they are somewhat milder. However no harmful effects in man have been attributed to the intake of unprocessed marine oils. Kremer et. al (16) have recently found that fish oil fatty acid supplements reduce the number of tender joints or delay the onset of fatigue significantly in patients with active rheumatoid arthritis.

ALTERNATION OF OIL COMPOSITION

Work in Canada and Sweden has resulted in the breeding of strains of rapeseed that yield oil almost free (below 0.5%) of erucic acid, which in traditional strains has been around 40%. The α -linolenic acid content is elevated in the low erucic acid strains, but is associated with flavour and rancidity problems. These new varieties form a substantial part of the rapeseed crop in several countries. Apart from the change in fatty acid composition,

it has been possible through breeding to reduce appreciably the content of glucosinolates. A major problem with cottonseed oil has been the presence of the pigment gossypol which is toxic to non-ruminants including man.

DIETARY FAT AND CARDIOVASCULAR DISEASE

Keys published a chart in 1953 which shows a relationship between mortality from arteriosclerotic and degenerative heart disease and the proportion of fat calories in the national diets. This association was further emphasized in two subsequent publications (17-19).

War time restriction in fat consumption in Europe and post war resumption of high fat diets was associated with striking changes in coronary heart disease mortality statistics. Migrating people who change their diets to higher fat levels show an increased incidence of coronary heart disease. Supporting evidence for the hypothesis that coronary heart disease may be the result of a high fat intake comes from a number of other studies.

According to Jolliffe, a nation's increased prosperity is accompanied by increased consumption of saturated fats at the expense of unsaturated fats. Increased consumption of hydrogenated fats since 1951 might be an additional factor responsible for changing this pattern (20).

A number of studies have shown an elevation of blood cholesterol

sterol and other lipid fractions on feeding diets containing highly saturated fats. The elevation of blood lipids has been assumed to favour an increased risk of coronary heart disease.

However, an association does not necessarily mean a cause and effect relationship. It has been shown that the presumed association is not specific for fat in the diet; for example, the association with heart disease mortality is stronger when animal protein is substituted for fat (21,22).

It was pointed out by the National Dairy Council that although the percentage of total fat or animal fat in Norway, Sweden and Denmark is comparable with that in U.S.A. and U.K., the death rate from heart disease at all ages is only about one third of that found in U.S.A. (23). Many other studies have failed to show any clear cut correlation between fat consumption and mortality from coronary heart disease.

In India, some very interesting studies have been carried out in which two groups of rail road workers from Northern and Southern parts of India were compared. Both groups had a similar socio-economic level, were in the age group 18-53 years and engaged in identical physical activity. The fat intake of North Indian workers was 19 times that of the South India workers and contained milkj products (75 g/day dairy fat) while the South Indians consumed very little fat and what they consumed was from unsaturated

fatty acids (7 g/day of ground nut oil). However, the incidence of coronary heart disease in the South Indians was 15 times more than that in their North Indian counterparts. Further more there was no correlation between their blood cholesterol and incidence of CHD. The average blood cholesterol in the North Indian group was 165 ± 4.71 mg/dl, while the corresponding figure for South Indians was 174 ± 4.71 mg/dl.

The South Indian diet contains a preponderance of longchain fatty acids (C 18:1), while the North Indian diet contains mostly short chain fatty acids (C₄ - C₈). The method of cooking used by the Northerens, especially the frying with fat having turmeric powder, reduces the size of the fat globules. Whereas the long-chain fatty acids have an absolute requirement for bile salts for their digestion and absorption, the short chain fatty acids are directly absorbed into the blood stream without chylomicron formation. Thus the fatty acid composition of plasma glycerides depends upon the fatty acids composition of the fed fats. The amount of bile entering the intestinal lumen of North Indians is four times that of South Indians and feeding experiments have shown this to be diet related.

The South Indians, have a preponderance of long chain fatty acids in diet; 44 percent of them showed shorter clotting time, firmer clots and very low rates of spontaneous thrombolysis, whereas

the North Indians with a preponderance of short chain fatty acids, showed significantly longer clotting times and soft jelly like clots which lysed rapidly. The findings are significant in view of observations that patients with IHD showed accelerated clotting times and have an increased proportion of long chain fatty acids (23.8 percent of eleic acid) (24).

Further investigation on Masai have recently been carried out. The Masai are characterized by low serum cholesterol and total absence of coronary heart disease, inspite of their unusual but customary diet composed entirely of animal fat, carbohydrates and proteins. The absence of CHD in these people was supposed to be due to freedom from emotional stress and vigorous physical exercise. The average daily calories intake was 3,000 calories with 66% derived from fat (mostly milk fat). The average cholesterol intake was 600-2000 mg/day. Average serum cholesterol levels were 135 ± 33.5 mg/dl and plasma betalipoproteins were consistently low. No significant age or sex differences were observed.

Cholesterol metabolic studies using 2g cholesterol/day in the diet with a trace of cholesterol-4-C₁₄ indicated a much larger capacity for cholesterol absorption in the Masai than the Whites and a greater ability to suppress endogenous cholesterol synthesis by about 50.5 percent, for compensation of the increased intestinal absorption. This efficient feed back

was obviously the protective mechanism.

Further measurement of cholesterol content of various tissues from autopsied Masai gave no evidence of excess cholesterol deposits in the tissues. Analysis of their gall bladder bile revealed a remarkably low cholesterol concentration which not only verified their inability to increase faecal excretion of cholesterol but also serves as a basis for the explanation of nearly total absence of cholesterol gall stones. Thus we see that there are so many exceptions to the correlation between dietary fats and CHD (25).

Keys and his associates did a number of controlled dietary experiments on human volunteers and claimed that the average serum cholesterol response to a change in the amount or kind of fatty acid in the diet can be predicted from the equation

$$\text{Cholesterol} = 2.7 S - 1.3P.$$

Where S and P refer to percentages of total dietary calories provided by glycerides of saturated and polyunsaturated fatty acids respectively. The mono-ene-oleic acid was without any effect. The saturated fatty acids responsible for the elevation of serum cholesterol have been claimed to be palmitic and myristic acid (26-28).

Keys has now modified his earlier statement and has included lauric acid in this group in addition to palmitic and myristic acid (29). Recent animal experiments suggests that, in the presence

of a high cholesterol intake, certain long chain fatty acids, principally arachidic and behenic, may be markedly atherogenic without raising the blood cholesterol concentration (30). There is also experimental evidence in man indicating that stearic acid and the saturated fatty acids with fewer than 12 carbon atoms (Mainly caprillic and capric) produce significant rises in blood triglyceride concentrations. Some other recent data indicate that Keys formula is not generally applicable for the prediction of the efficacy of dietary change on serum cholesterol concentration. Again with regard to the variation in polyunsaturated fatty acids, no certain relation with blood lipid concentration appears to be present (31).

In a controlled 16 week trial the effects of a diet low in total fat and low in polyunsaturated fatty acid and one moderate in total fat but high in polyunsaturated fatty acids were compared. Both diets contained the same amounts of cholesterol, oligosaccharides and other nutrients known to affect serum lipids. Total serum cholesterol increased by 0.21 ± 0.41 mmol/litre on moderate fat diet during the test period of 13 weeks; 0.09 ± 0.11 mmol/litre of that was due to high density lipoprotein cholesterol. Total serum triglycerides remained constant during the test period on this diet. On low total fat but high polysaturated fat diet the serum cholesterol remained stable but high density cholesterol decreased by 0.06 ± 0.20 mmol/litre. The difference in HDL cholesterol between the

diet groups was mainly in HDL₂ (32).

In a recent interesting study, male weanling rats were fed soya-bean or low erucic acid rapeseed oils alone or in combination with coca butter or triolein for 16 weeks. Growth was improved by supplementing the vegetable oils with coca butter (a source high in saturated fatty acids). After 16 weeks all groups of rats developed myocardial necrosis. A dramatic lowering of myocardial lesion incidence was observed in rats fed diets enriched with saturated fatty acids. The results suggest that enriching a vegetable oil with saturated fatty acids affects both nutritional and cardiopathological properties of the oil (33).

The Food and Nutrition board of the National Academy of Sciences of United States has considered the role of diet in heart disease. Its comments are as under, "Intervention trials in which diet modification was employed to alter the incidence of coronary artery disease and mortality in middle aged men have been generally negative. Seven large scale studies were carried out in London, Oslo, Helsinki, New York city, New Jersey and Los Angeles for 2 to 10 years on 3,060 men, 20-59 years of age, with or without previous myocardial infraction. In these studies comprising about 20,000 man-years of observations, in which decreases in serum cholesterol of 7.16 percent occurred, there was a marginal decrease in coronary artery disease incidence but no effect on overall mortality. In addition, 5 trials involving

18,000 men for 5 years have been carried out with hypocholesterolemic drugs in England, Scotland, Europe and the United States. The effects of the drugs on the incidence of coronary artery disease were not impressive and some unpredicted toxicities were observed" (34).

Mitchell (35) has cited 2 lipid orientated studies and four multiple risk factor trials and concluded that the data are not consistent enough to suggest a definite role for any dietary factor e.g. saturated fats in the etiology of coronary heart disease. During a 12 year follow up period in a prospective study of 1462 women in Gothenburg, Sweden, energy intake was found to be inversely correlated with the 12 years incidence of myocardial infarction and no correlation was found between the percentage of energy as fat, protein and carbohydrate and myocardial infarction (36).

RECOMMEND INTAKES

There is international consensus with the exception of scientific circles from UK department of Health and Social Security Committee on Medical United Kingdom that the intake of polyunsaturated fatty acids should be increased, preferably to the same level as the intake of saturated fatty acids. A dietary intake of 30-35% of energy as fat and a saturated/polyunsaturated fatty acid ratio of 1:1 are generally recommended. As the ratio of saturated fatty acids to monounsaturated fatty acids in most dietary patterns is 1:1, the recommended polyunsaturated fatty acid intake should be about one third of total fatty acid intake i.e. 10-12% (37).

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FLEAS AS ECTOPARASITES OF DOMESTIC RATS IN ISLAMABAD/RAWALPINDI AND ITS VICINITIES

*ABDUL AZIZ, RIAZ, A. PAL AND FAIYAZ-UL-HAQUE

ABSTRACT

Six species of domestic rat fleas have been described from Islamabad/Rawalpindi and its vicinities. The studies include two different families of Siphonaptera. So far no work has been done on this aspect in the area under study.

INTRODUCTION

Fleas serve as important vectors of bubonic plague, Tularemia, murine typhus and many other bacterial, parasitic, and rickettsial and viral diseases. Dog and cat fleas also transmit the dog tapeworm, Dipilidium caninum and rodent tapeworm, Hymenolepis nana and H. diminuta. Traub et al (1967) while working on Scrub Typhus described five different species of fleas from different areas of Gilgit Agency and Kaghan Valley. Shafi et al (1984) while studying the fleas infesting rodents and insectivores in Lower Sind reported Xenopsylla cheopis and X. astia from Rattus rattus and Rattus norvegicus.

Very little work has been done

on rat fleas in Pakistan. Present studies conducted during January to April 1986 are therefore anticipated to be very helpful for further research programmes on flea borne diseases and vector control in the country.

METHODS AND MATERIALS

Domestic rats were collected with the help of live rat traps, brought to the laboratory and anaesthetized. Soon after anaesthesia some of the fleas started leaving the host while those on the body were removed with the help of a camel hair brush and forceps. Collections were preserved in 70% alcohol and then identified with the help of descriptions given by Kenneth, G.W.S. (1973). Diagrams were made with the help of camera lucida.

RESULTS

Common human flea, Pulex irritans
(Pulicidae : Siphonaptera)

Ocular bristle is beneath eye. Mesopleuron without internal sclerotization, spermatheca entirely

* Department of Biological Sciences,
Quaid-i-Azam University, Islamabad

without pigment. Front margin of head round and thoracic tergites together longer than first abdominal tergite. Pronotal and genal comb absent. Abdominal tergites possess only one row of setae (Fig 1a and 1b).

Xenopsylla cheopic

(Pulicidae : Siphonaptera)

Ocular bristle in front of eye. Mesopleuron divided by internal sclerotization. Front margin of head evenly rounded. Thoracic tergites together longer than the first abdominal tergite. Pronotal and genal comb absent and the abdominal tergites possess only one row of setae. The inner side of hind coxa has got a ventral sub-basal tooth (Fig. 1b, Fig. 2a to 2f and 2k to 2l).

Xenopsylla astia

(Pulicidae : Siphonaptera)

Ocular bristle in front of the eye. Mesopleuron divided by internal sclerotization. Front margin of the head round. Three thoracic segments together longer than the first abdominal tergite. Pronotal and genal comb absent. Abdominal tergites possess only one row of setae. All these characters are the same as in those of other *Xenopsylla* species but the size and shape of spermatheca and the male terminal segment differs (Fig. 2g and 2h).

Xenopsylla vexabilis

(Pulicidae : Siphonaptera)

Position of ocular bristle, shape of mesopleuron, head and length of three thoracic segments

are similar with those of other *Xenopsylla* species, pronotal and genal comb absent. Abdominal tergites also possess only a single row of setae. *Xenopsylla vexabilis* differs from other species by the size and shape of spermatheca and the male terminal segment. (Fig. 2i and 2j).

Nosopsyllus fasciatus

(Ceratophyllidae : Siphonaptera).

Genal comb absent and pronotal comb present with 5 to 10 teeth on each side. Labial palps are short. Abdominal tergites possess two rows of setae (Fig. 3a to 3c).

Stivalius ahalae

(Ceratophyllida : Siphonaptera).

Genal comb absent and pronotal comb present with about 12 teeth on each side of thorax. Head evenly round. Two rows of setae on abdominal tergites (Fig. 3c and 4).

DISCUSSION

No work has been done to this effect in the area under study and the species collected are very commonly found. Traub et al (1967) reported 5 species of fleas from rats of Gilgit Agency and Kaghan Valley but they did not mention these species. According to them *Nosopsyllus simla*, a parasite of *Rattus rattoides* while from the present studies a species of *Nosopsyllus*, the *N. fasciatus* has been collected alongwith other species. *Stivalius ahalae* has also not been reported before. Shafi et al (1984) reported *Xenopsyllus*

cheopis and Xenopsylla astia from Rattus rattus and Rattus norvegicus from lower Sind but from this area Xenopsylla vexabilis is also being reported

Fig. 1a. Pulex irritans, Ocular bristle beneath eye and mesopleuron without internal sclerotization. Pronotal and genal combs are absent.

Fig 1b. three thoracic tergites together longer than the first abdominal tergite in Pulex irritans and Xenopsylla.

Fig. 2a Xenopsylla, front margin of head round, ocular bristle in front of eye.

Fig. 2b. Xenopsylla, mesopleuron to show division by internal sclerotization.

Fig. 2c. Fore distitarsomere (male) Xenopsylla cheopis.

Fig. 2d. Hind coxa of Xenopsylla cheopis to show row of spines.

Fig. 2e. Male terminalia of Xenopsylla cheopis.

Fig. 2f. Xenopsylla cheopis showing the presence of ventral tooth.

Fig. 2g. Spermatheca of Xenopsylla astia.

Fig. 2h Male terminal segment of Xenopsylla astia.

Fig. 2i. Spermatheca of Xenopsylla vexabilis

Fig. 2j. Male terminal segment of Xenopsylla vexabilis

Fig. 2k. Spermatheca of Xenopsylla cheopis.

Fig. 2l. Male terminal segment of Xenopsylla cheopis.

Fig 3a. Labial palpi and pronotal comb in Nosopsyllus fasciatus.

Fig. 3b Spermatheca of Nosopsyllus fasciatus.

Fig. 3c. Nosopsyllus fasciatus. Two rows of setae on abdominal tergites.

Fig. 4. Pronotal comb with 12 teeth in Stivalius ahalae.

FIG. 1a

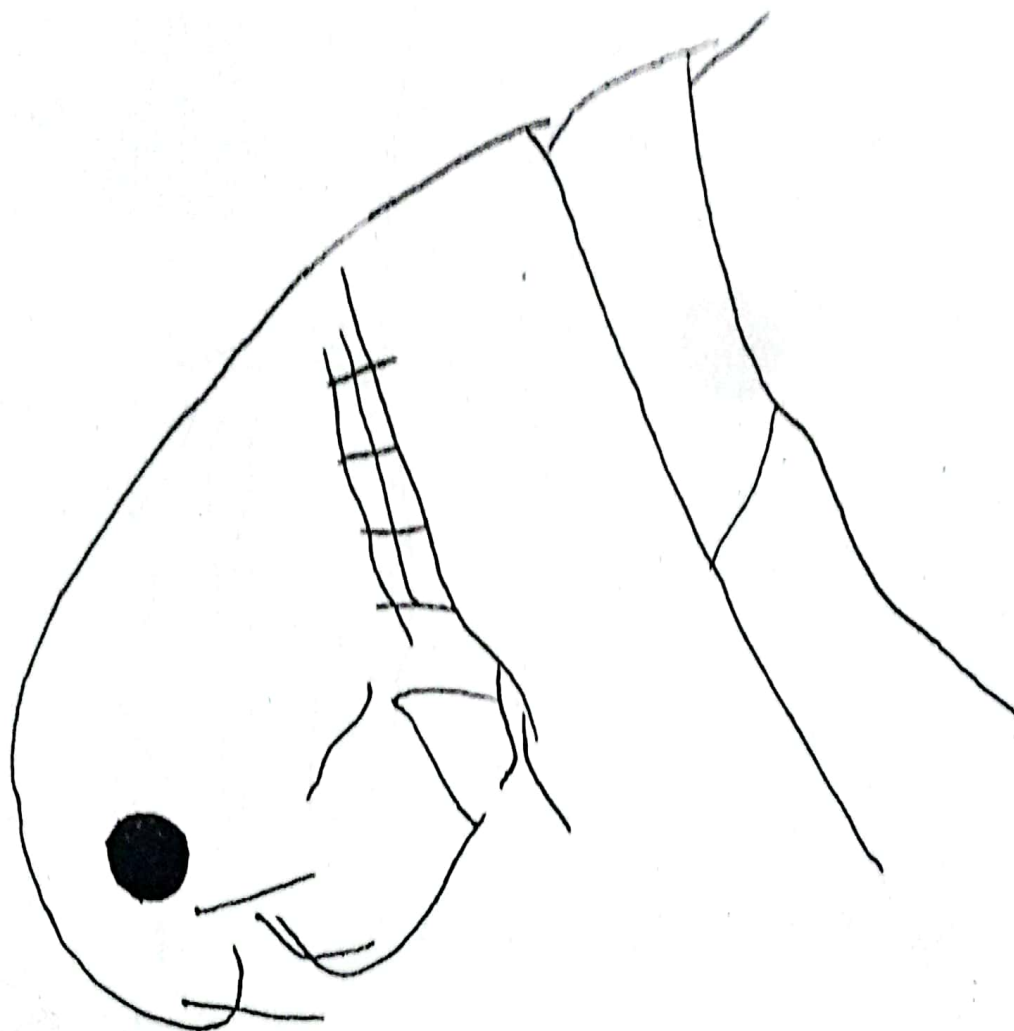


Fig 1b

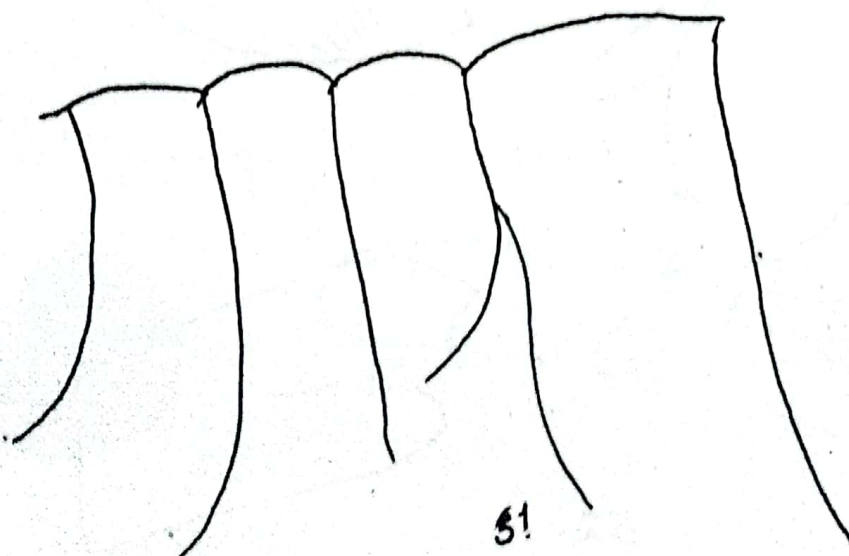
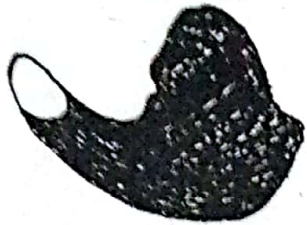


Fig-2



g



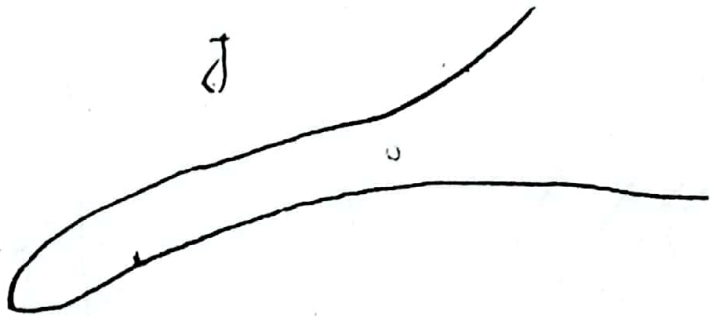
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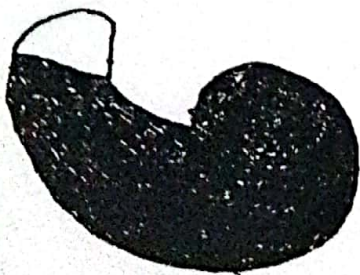
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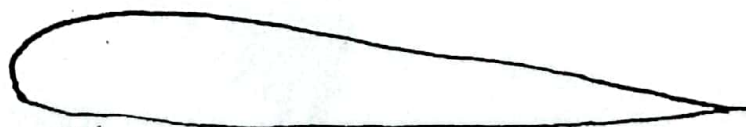
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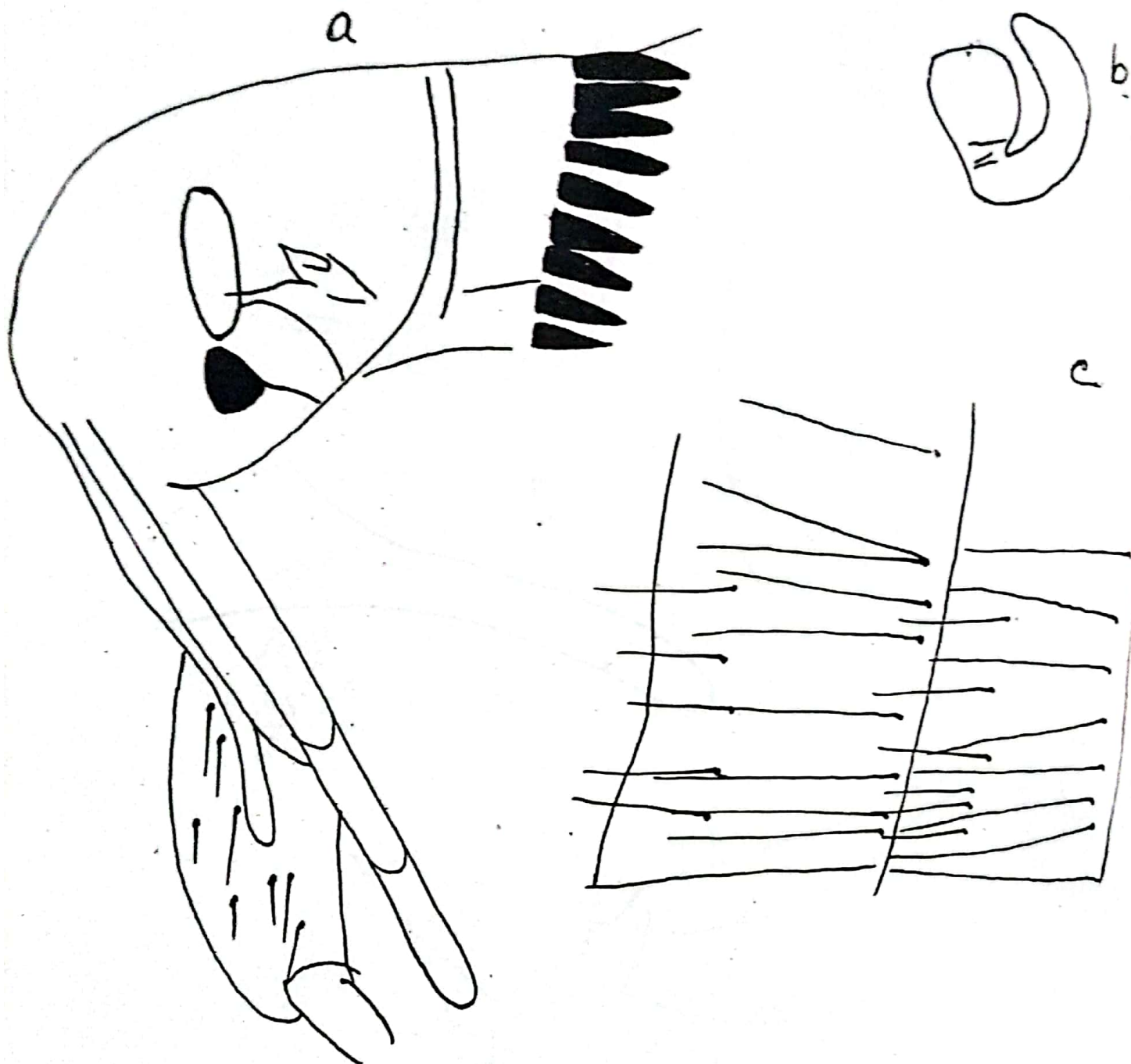


L



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Fig- 3



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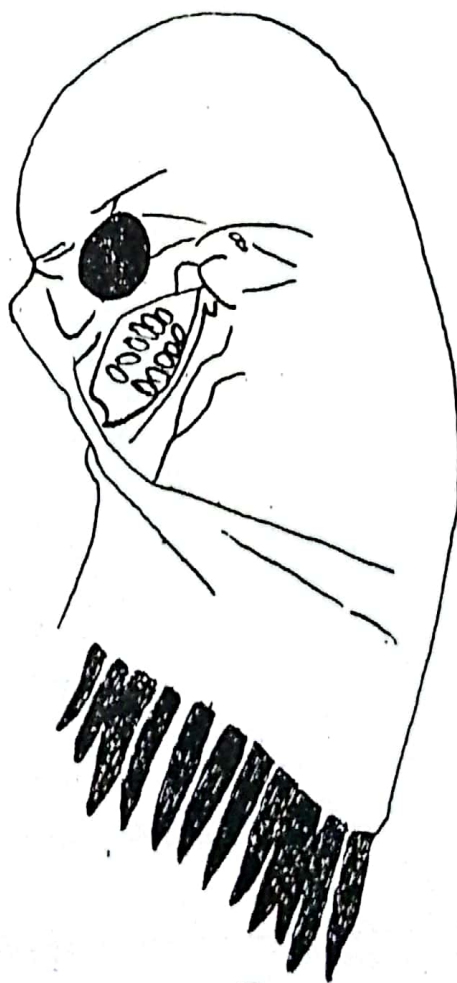
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Fig-4



A LABORATORY TRIAL ON THE EFFECT OF GREEN CARP, A LARVIVOROUS FISH IN CONTROLLING MALARIA VECTOR MOSQUITOES

*ABDUL AZIZ AND I. H. SHAH

ABSTRACT

Green Carp, Ctenophoringodon idella was tried in the laboratory to see its effect in reducing mosquito populations and the possibility of using this fish for mosquito control programmes. It was observed that green carp devoured all different instars of both the Anopheles culcifacies and Anopheles stephensi larvae and proved as an efficient larvivorous fish.

INTRODUCTION

Feeding habits of fishes incidentally have close association with those of mosquitoes and therefore it was considered that the use of larvivorous fishes in the breeding places may help in reducing malaria vectors and other mosquito species. Considering similar possibilities the external evaluation team in 1987 also recommended the use of alternative methods for malaria vector control in the country. This emphasis was paid due to the development of insecticide resistance in mosquito vectors and other detrimental

effects of chemicals to flora and fauna. There is a need to pay considerations on applied field research for developing alternative methods for making an effective mosquito control approach. Introduction of alternative ways like, clearing of water ditches, development of underground drainage system, use of light traps, release of sterilized males, reducing the man vector contact, keeping of domestic ducks in the villages and the peripheries of the cities and releasing larvivorous fishes in the ponds may solve mosquito and mosquito borne problems in the country. In foreign countries a bulk of work has been done and is also being carried out on this aspect of mosquito control (Dayey et al 1974 and Legner and Fisher 1980, Meisch 1985, Kramer et al 1987). W.H.O. (1987) also discussed the importance and introduction of different larvivorous fishes like Tilapia and Oreochromis etc. for the control of mosquitoes in different parts of the world.

Present studies were conducted

* National Institute of Malaria Research and Training,
6-A. R. Chughtai Road, Lahore.

on different locally available and localized fishes for seeing their effect in controlling the malaria vectors, the *An. culicifacies* and *An. stephensi* with the idea of finding suitable species of fishes for use on large scale in malaria control programmes in the countries. A separate article has been written on other larvivorous species which is under preparation. This article deals with green carp.

METHOD AND MATERIALS

Laboratory reared *Anopheles culicifacies* and *An. stephensi* were mixed in 1:1 and lots of 300, 400 and 600 were made by actual counting with the help of rubber pipette and were kept in 48 X 35 x 12 cm plastic containers having water collected from fish ponds. Water in the containers was six liters to create sufficient depth for the larvae as well as for the fishes.

Approximately five centimeter green carp fishes were obtained from fisheries department and two fishes were added into the container and were observed for 24 hours. In three experiments fourth instar larvae were added and in the remaining five replicates two the three instar larvae were added to see the difference in preference towards different instars of both the species of anopheline larvae.

The experiment was replicated eight times.

RESULT AND DISCUSSIONS

Green carp devoured 100

percent larvae within 24 hours and it was found to be a very good larvivorous fish. In all different replicates all the larvae were devoured within 24 hours. However it was observed that the fishes eat second and fourth instar larvae within two to two and a half hour of adding larvae to the fishes. It is therefore concluded that if these fishes are released in permanent and temporary rain water ponds, the fishes will naturally devour early instar larvae of all different species of mosquitoes.

Total Larvae	Larvae left after 24 hours.
400 (4th instar)	Nil
300 " "	Nil
500 " "	Nil
400 (2nd & 3rd instar)	Nil
600 " " "	Nil
500 " " "	Nil
500 " " "	Nil
400 " " "	Nil

For an effective malaria and mosquito control program this fish if supplemented with larvivorous domestic ducks, clearing of scattered ditches and selective application of suitable insecticides in the plains of Punjab may prove good results. However emphasis will have to be paid on the supervision of work and the encouragement of the man who actually works in the field

The fish may not only be

useful in the control of mosquitoes but it will also serve as human food. Considering the present findings it has been proposed that a field trial covering two or three villages should be carried out during transmission period and the entomological and parasitological data for the whole year should be recorded in every month to see the effect of larvivorous fish on vector control and malaria transmission.

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UTILIZATION OF HEALTH SERVICES BY THE POPULATION OF UNION COUNCIL CHUNG DISTRICT LAHORE

***DR. MAQSOOD AHMAD, M. PHIL**

****PROF. DR. MUHAMMAD NASIR AKHTAR**

*****DR. MRS. SAEEDA RASHID**

INTRODUCTION

The Government of Pakistan is planning to provide at least one primary health care facility in each union council throughout Pakistan by the year 1990. Different studies show underutilization of the existing ones, which is also obvious from the poor health status of rural communities. Review of the current literature shows that factors affecting utilization are related to both the health care delivery systems and the communities. The complete picture of utilization can only be brought into view by studying the utilization of both public and private health facilities in a defined geographic area with a defined population. For such type of studies routine data is not available, particularly with reference

to non-users and hence community surveys are the only solution. In this study utilization of health services by the population of union council Chung was investigated with particular reference to Rural Health Centre Chung. Household survey was conducted for this purpose.

MATERIAL & METHOD

The study sample included one third of the total households in the universe. This constituted 917 households. Systematic sampling technique was used for selecting sampling units. Every third household was interviewed in all the villages starting with a household selected at random by drawing lots. A closed questionnaire was developed to record the information. Six inter-

* Assistant Professor,
College of Community Medicine, Lahore.

** Chairman Department of Hospital Administration,
College of Community Medicine, Lahore.

*** Associate Professor,
Department of Public Health Practice,
College of Community Medicine, Lahore.

other facilities.

While the increases in longevity adds years to life, therefore,

dental health is very important to add life to years, because it is of the vital concern for health.

viewers were trained in the art of interviewing and recording those forms. The questionnaire was subjected to pretest and finalized. The interviewers were divided into three teams and each team recorded ten forms on each working day. Total 913 households were interviewed. Four households were not available in their houses even on second contact. As the number was very small herefore they were not included in the analysis.

Data was processed and analysed with the help of a computer. The analysis included frequency distributions and summary indices of frequency distributions i.e., percentages, means, and rates. Associations between different variables were carried out through cross abulations and diagramatic representations. Elaboration of associations was made by applying tests of significance.

RESULTS

For analysis purpose villages were divided into two groups depending upon the distance from RHC Chung. Villages within two kilometers of RHC were named Group A and villages more than two kilometers as Group B. There were 760 households in Group A and 153 households in Group B.

Findings show that 89.81% households in the toal sample were aware of the RHC. In Group A villages awareness was higher (93.68%) as compared to Group B (70.59%). The difference was statistically significant. Families with

heads in age group above 51 years had highest (93.57%) level of awareness and the age group upto 35 years lowerst (85.23%). The difference was statistically significant. Regarding occupation, the families with non-working heads had the highest level of awareness (95.96%) and the families with factory workers as their heads lowest (81.82%). The impact of occupation was statistically significant. Findings regarding sex, educational level of heads and family incomes were not statistically significant.

The overall Utilization Rate (patient visits per year per hundred population) for RHC services was 60.13%. It was higher for Group A villages (61.81%) as compared to Group B villages (53.19%). It was also higher for children (67.52%) compared with adult population (52.74%). The differences were statistically significant both for village groups and age. Differential Utilization Rate for MCH services (Annual MCH visits per 100 births) was 79.13%. The rate was higher (46.09%) for antenatal, natal and postnatal services as compared to all other MCH services (33.04%).

Regarding families utilizing RHC services, 60.23% were among the users. The village group differences were statistically significant. The figures were 64.34% for Group A and 39.87% for Group B. the percentage of families utilizing RHC services in age group 36 - 50 years was highest and the percentage for families with heads in age group 51 and above was lowest

and the differences for age were statistically significant. Considering family size the percentage of user families was highest for families of 5 to 6 members (65.85%) whereas figure was lowest for families of 1 to 2 members (42.86%) and the differences were statistically significant. Finding for the impact of sex, marital status, education and occupation of heads on utilization was not statistically significant. This was also true for impact of family incomes on utilization.

Most of the families go on foot (93.90%) to visit RHC. Regarding time, 68.18% families require upto one hour, whereas 23.27% upto two hours or more to reach RHC. Majority of the families (89.09%) can afford the costs of visiting RHC.

Total 20 referrals were made in one year from RHC to other institutions. Out of these 8 (27.6%) patients actually attended the referred institution. Only two referrals were made from other health facilities to RHC.

The overall satisfaction from RHC was higher (48.06% responses) in Group B as compared to Group A (46.24% responses). In Group A people were most dissatisfied from food supplements (90.7%), Midwifery services (76.2%), efficacy of treatment (66.2%), infant care counselling (65.8%), availability of drugs (62.8%) and distance of RHC (54.0%). The figures for Group B given in the same order were 100%, 98.4%, 44.3%, 68.9%, 42.6% and 75.4%.

Reasons for non-utilization of RHC services in Group A were mainly, location of RHC at long distance (30% of total responses), unsatisfactory treatment (11.08%), other facilities more convenient to contact (10.70%), non-cooperative staff (8.54%) and long waiting time at RHC (8.16%). In Group B villages the main reasons for non-utilization of RHC services were long distance (33.02% of the total responses), other facilities more convenient to contact (11.79%), transport problems (15.09%), unawareness about the presence of RHC (10.61%) and non cooperative staff at RHC.

Regarding outreach activities of RHC, 55.92% families in Group A and 66.01% families in Group B were aware of the Multipurpose Health Worker Team (MPHW Team). The average number of visits by the team per household per year were 1.50 in Group A villages and 2.25 in Group B villages. The services provided by the team included vaccination to children (73.2% of the total responses), treatment of diarrhoea (18.2%) and MCH counselling (2.9%). More families were satisfied from MPHW Team in Group B villages (75.3%) as compared to Group A (49.6%) and the difference was statistically significant.

The utilization of health facilities other than RHC in the area was also studied. Utilization Rate was highest (141.67%) for paramedical group and lowest for other government health facilities (1.9%). Private doctors ranked second (21.52%), hakim third (10.43%)

DISCUSSION & RESULTS

Keeping these findings in view recommendations are made for the development of village health committee, methods of cooperation between RHC and other health facilities, development of health insurance programme and relevant further research.

1. PUBLIC AWARENESS

Although most of the population is aware that there is a health centre but they do not exactly know what is going on there. The level of awareness must be raised in real sense. This needs effective health education programmes not only at the RHC level but also at the community level.

2. MPH W TEAM AND THE VILLAGE HEALTH COMMITTEE

The idea of MPH W Team was introduced in the recent past. Although it was the result of some pressures within and out side the health system, but is good enough to be exploited. At present here is practically no accountability, resulting in poor efficiency. Secondly the team has total orientation within the health system. Community involvement is entirely lacking.

A practicable idea for the development of health system at grassroot level for the effective delivery of Primary Health Care and for achieving the goal of Health For All is presented here.

In the three tier system, the pariphal and intermediate levels are actually the delivery

points for primary health care, so they need to be sttrengthened. his can only be done through developmen of proper communiy participa-
ion.

Forming village health committee is one way of achieving community participation, enabling rural people to understand, through actual experience, the problems, that can be solved with their own resources. By working together with health personnel (MPHW Teams) he community members can identify and analyze problems, set priorities and draw plans of action and implement hem.

For that mater some changes may be made in he composition of MPH W Team and to support its activities, a village based team should also be developed. The incharge should have direct access to a docor specially designated for this purpose, so that the incharge may request the doctor to join him, as the circumstances may arise particularly when having meeting with the village committee. Secondly the incharge must be trained in the art of community organization.

The composition of village based team (may be pronounced as Village Health Committee) and its functions are described below:-

a. Composiion:

1. Councilor of the Union
Chairman
Council.
2. School teacher (Senior one)
Secreary
3. Peish Imam (All if more
than one). member

and spiritual healers fourth (3.21%) in this regard. The same pattern was observed for children and adult population for both A and B village groups. Comparing the Utilization Rates of children and adults the former had higher Utilization Rate in Group A villages (173.39%) for children and 145.67% for adults) whereas it was higher for the later in Group B villages (270.79%) for children and 274.75% for adults). For MCH services the rate was again high for paramedical group (142.17%), untrained dai ranked second (38.70%), hakim third (26.07%) and the private doctor fourth (6.07%) in this regard. There was a marked difference between the two village groups regarding utilization of MCH services. The rate was 925.58% for Group B villages, whereas the figure for Group A villages was only 59.36%.

When asked for preference for different health facilities in the area from Group A households, 78.9% of the responses were in favour of paramedical group. Second preference was for private doctor (7.6% responses), third for RHC Chung (4.7%) responses and fourth for household remedy (3.5%). Preference for RHC Chung was mostly for day time emergency for all types of individuals (65% of the total responses for RHC). Private doctor was preferred for sickness of all types (61.60% of total responses for private doctor). In case of paramedical group the responses were uniformly distributed for all types of situations. The figures for hakims were similar to those for RHC. In Group B

villages again the most preferred mode was paramedical group (61.30% of total responses), private doctor ranked second (11.0%), hakim third (10.8%), household remedy fourth (7.9%) and RHC fifth (3.5%) in this regard. Preference for emergency and different types of sickness were similar to those by the Group A households.

The community made suggestions for the improvement of health services in the area. These included round the clock working hours for RHC, provision of public transport to reach RHC and establishment of more health centres in the area. Regarding payments at RHC for a single visit 20.26% were willing to pay Rs. 5/- or more in users group, while the figure for non-users was 19.48%. Regarding improvement of services provided by RHC, the non-user households suggested to improve drug supply (28.12% of total responses), reduction in waiting times (17.71%), provision of more staff (11.72%), making the staff at RHC punctual (10.42%) and improving their behaviour (10.68%).

The households utilizing RHC services suggested to improve drug supply (27.55% of total responses), reduction in waiting times (19.87%), improvement in staff behaviour (16.32%) and making the staff punctual (12.11%). They also suggested to improve laboratory facilities (11.96%), provision of more staff at RHC (7.75%) and training of more Community Health Workers (4.43%).

DISCUSSION & RESULTS

4. Two members from the general public. member

5. Mason (paid one). member

b. Job description

Councilor:

Incharge of the team and a link on the one hand among both the teams and on the other hand between the teams and the union council. He will mobilize the community resources.

School Teacher:

He will impart health education to the students so that they may disseminate their knowledge through out the community. Secondly he will also have to maintain healthful environment in the school. Thirdly working in the capacity of secretary will keep the records of the committee.

Peish Imam:

Health education of the masses in the light of islamic concepts. He may utilize his Jumma speeches for the purpose.

Members from the General public

To help the team in performing its duties.

Mason:

Having the knowledge and skill of constructing healthful houses, sanitary latrines and installation of hand pumps, he will not only advise the people in this respect but will actually help them.

The team from RHC will have 74

meetings with village team on weekly basis. They will discuss the past experiences and be working. Doctor from RHC may be called in these meetings if a situation arises. But he will work only in advisory capacity.

3. THE DISSATISFACTION ASPECT

To encourage utilization the elements of dissatisfaction must be given due consideration. Improvements must be made where feasible and orientation may be given through health teams where the health system cannot do much.

The major elements of dissatisfactions may be broadly divided into three elements i.e. dissatisfaction from location of RHC, MCH services and the Emergency services.

Regarding location and distance frictions, measures could be adopted to make approach easy to RHC. One way is to build the entrance opposite the police training centre. Secondly with the consultation of highway department some type of safety measures may be developed for crossing the main highway to reach RHC.

Regarding MCH services, more TBAs should be trained. The working of those TBAs should be supervised by the MPH. The village health committee should provide community support to them. The MPH Team/village health committee may have joint venture with other health facilities in the area in this regard.

The provision of emergency services is of crucial importance.

For that matter on the one hand RHC should develop a mobile emergency care team, having an ambulance at hand and on the other hand at least the members of village health committee must be trained at RHC in simple life saving measures and First Aid.

4. COOPERATION WITH OTHER HEALTH FACILITIES

This is perhaps most important but at the same time most neglected one. At the higher level government is trying in this direction by registering Hakims etc. But the result is only of parallel working and working and development of professional jealousy. The cooperation must be gained at the community level. The village health committee can play the main role. The committee may invite other providers of health in their meetings and seek their advice as well. This may lead to conflicts at times, but with the passage of time group relations will develop and community itself will assign the roles to both RHC and other providers of health care.

5. HEALTH INSURANCE

People have complaints of non-availability of drugs. They also do not attend when referred to other institution, probably they are not welcomed there. The idea of cooperative health insurance is gaining importance. One idea is that village committee should collect the amount fixed according to the local situation and pass on to RHC, where the accounts may be maintained. In response

to that none should be denied of any necessary medicine. About twenty percent of people are already willing to pay at least Rs. 5/- for single visit of RHC, others may be convinced by the team. RHC with this amount must ensure that referrals are being properly attended and treated. If the resources allow, the village committee may have contracts with private hospitals.

6. ESTABLISHMENT OF NEW HEALTH FACILITIES

With effective functioning of the proposed teamwork, there may be no need to establish a new health facility in the immediate future. But one thing is important, according to reliable resources, the Police Department has purchased the land and RHC will have to be shifted. If it is so, then it must be constructed within the easy approach of population clusters. This is also an important lesson for the establishment of new health facilities elsewhere.

With the 3.8% Growth Rate, need may develop in the near future to establish new health facilities in the area. The best location will be some where among the population clusters of Group B villages.

7. RESEARCH

Research is of primary importance and must be given due consideration. Mechanisms should be developed to involve the communities for this purpose. Some suggestions are made for the local situation.

- a. The other two aspects of the utilization process should be investigated. Firstly studying the health facility for proper use of health personnel and physical facilities in relation to health policy and commitments. Secondly studying patient attendance and perceptions at the RHC Chung. This will give the overall picture of the utilization process.
- b. Possibility of making village health committee also needs relevant socio-medical research.
- c. Research for introducing health insurance scheme needs immediate action.
- d. Problems faced by the MPHWP Team also need investigation, particularly in reference to transport and community reactions.
- e. Areas and methods of cooperation between RHC and other health facilities need to be investigated in detail for the effective functioning of the health care services and developing line of action for proper and integrated Primary Health Care Programme.

DENTAL PROBLEMS OF THE ELDERLY

BY

Prof. (Dr.) M. A. Soofi,
BDS, DPD, MICD, MPFA, Post-Graduate(Perio)

The elderly population is faced with increased incidence of chronic diseases. The chronic diseases result in chronic disability which leads in turn to the need for facilities adequate to the humanitarian task of helping, so far as possible, the chronically diseased person. The almost perfect, excellent and most modern hospital and Public Health Centres, Social Welfare Agencies, that exist in many parts of the world, do invite our attention, specially those of philanthropist and social corps to equip ourselves in all respect to help the aged population.

There is a need for formation of a geriatric centre and geriatric care society, having physician for clinical aspect, dietician for diet, arrangement for exercises, audial aids and care for daily needs including dentistry. An ideal centre should have facilities for transportation from centre to hospital with recreational arrangement in it.

Aging can be considered a normal process of involutionary changes likely to deviate into pathology resulting from the impact of external stresses and strain. Tissue disiccation, decrease of tissue elasticity, atrophy and degeneration and then dominant physiologic process found in the aged.

Geriatric care and treatment does not differ markedly from the young adult, only the reactivity of geriatric is quantitatively different. Attitude of geriatric patients towards chronic illness may obstruct the progress of preventive medicine, World Health Organisation believes that chronic disease affecting elderly can be ameliorated by treatment and care only. There is a need of social worker to convince the geriatric for objective of their well being and to remain active, and functioning to have longevity of life without much effort - in case of neglect, elderly cannot add to life.

COMMON GENERAL OF AGED WHICH AFFECT DENTAL HEALTH

1. HEART DISEASE

The aging process exerts a profound upon the heart. Cardiovascular diseases including coronary artery and hypertensive diseases are disease of aged.

2. CEREBRAL HEAMORRHAGE

Cerebral heamorrhage occurs as a result of physical exertion such as straining, lifting or severe coughing spells. Increased headache, and unconsciousness usually develop in a rapid sequence. Flaccid hemi-

plegia is present in elderly and spinal fluid may be grossly if the intera ventricular is involved.

3. ANEMIA AND NUTRITION

Disability is one of the most serious problem of the aged. The cancer, fracture and heart disease take enormous tolls each year. In an aging individual anemia (lack of red blood cells) may be the first manifestation of underlying blood disease such as bleeding of neoplasm, bleeding from leukemia (cancer of blood cell), chronic infection, long illness, pernicious anemia mal absorption syndromes. Shortness of breath, palpitation, intermittent claudication and frank congestive heart failure are other signs.

Appropriate treatment with correction of primary process with specific hematonics is needed since, this is a prolonged treatment, a social worker is supposed to collect required medicine and correct formula of diet including other, first aid, contact of doctor with family for delivering such aids. Socio-economic factors might be responsible for faulty dietary habits. Geriplex capsule or vitamins are a must for such cases to overcome anemia and mal-nutrition. In addition the dietician, social workers and psychologist shall design and plan for exercise to take up better life in better environment. Thus there is need for teaching to take up better life in better environment. Thus there is need for teaching of exercise for aged and to be kept away from extra stresses of life and extensive

family system is to be encouraged to this problem.

4. PSYCHOLOGICAL PROBLEMS

Socio-economic environment profoundly effect personality of living habit, decreased income, more children and chronic ailment of elderly and family etc, are added into this problem, maintaining individual status on the declining years of age after required reputation. This bring a pressure in 'ego-controls which release, repress aggressive impulses, anger irritability etc. to the aged. In case of unemployment and burden of the family, this too add miseries. Such cases can be helped through financial aid and employment through the help of social worker.

5. SURGICAL PROBLEMS

Surgical problems of aged are :-

- (a) Pure general surgical problem;
- (b) Dental Surgery Problem.

The technique of surgical science is very much advanced and now the surgical operation is no longer dis-prognosis, in aged except attempt to be made to evaluate and discover the untreated disease meant for surgery, because without this it may adversely effects the surgical intervention. A complete history taking is a must. In such line in a surgery of many aged persons was carried out, mortality rate was 3.2%, Prostheses for facial deformity is another achievement of science. It is hopeful to aged and there is a need for special attention in wards.

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by special nurses for the aged.

6. DENTAL SURGERY PROBLEMS

There are two types of dental problems in aged :-

- (a) with teeth.
- (b) without teeth.

DENTAL PROBLEMS WITH TEETH:

1. Attrition

1. Attrition

It is a mechanical wearing down of the surfaces of teeth as result of mastication. It is common with Eskimos, Alaskas, Canadian and in Greenland etc. Attrition may be proximal and incisal. Some advanced cases feel pain without any decay. Due to any process of attrition, intake of food is a problem, restlessness and tension are added into the pain. Proper care for attrition is a proper medicine, X-Rays examination to be carried out for investigation, Attrition is more common in those cases whose teeth are hypoplastic and wearing at the contact areas is caused by friction and brought about extra grinding.

The habitual tobacco chewer get more attrition in a palatal cusp of upper teeth and buccal cusps of lower teeth and in this way the dentine of such teeth is exposed. The patient may be advised to leave tobacco chewing, and discouraged for smoking in certain cases. The gross attrition has also been observed when the whole of grinding enamel has been worn away because there is softer dentine underneath in it. Similarly such cases of attrition can be protected

of exposure of the pulp through the production of reparative dentine, and in certain cases acrylic splints, is often prescribed. In case of bruxism and some other cause related to tempo-mandibular joint infection, the splint is worn at night and in some cases, it can be used day time. This halts the wear process, sure to equilibration occlusion and discourages the grinding habit of the teeth. In some cases, metal overlays, has to be given. So the patient is provided a removable dental splint to prevent wear and tear of the teeth.

2. Abrasion

This is a progressive superficial loss of tooth surface without mechanical or traumatic factors. It is associated with acids where Hydrogen Ion saturated takes place, this leads to pain to the patient. Repeated regurgitation of food from the stomach in elderly person is another cause and by taking dilute hydro-chloric acid, in patients suffering from hypochlorhydria erosion. Workers in chemical plants or acid factories are liable to get erosion in the anterior teeth. Citric acid in all forms is to be highly restricted for control of erosion of tooth tissue, and those who habitually suck lemons, oranges, grape fruit, lemons juice and soft drinks and soft sweetened orange juice are to be cautioned. There is another erosion called Idio-pathic erosion of teeth. Treatment, is courses of appropriate fillings and advice for stoppage of intake of acids.

3. Hidden Dental Caries

Hidden dental caries is common attack of pain to aged that can be corrected through filling after radiographs. Dental caries disturb the aged because they are painful and interrupt the mastication. Broken roots are another problem of aged and such root interfere his rest and mastication. Due to broken roots I have come across the patient suffering from pain of trigeminal Neuralgia who accepted it as fate. He is over 65 years. It was painful situation. Through the help of X-Ray broken root was taken away and patient felt relief after 14 years. Broken roots can also cause osteomyelitis or Necrosis and this too can act as source of infection, harmful for general health. There should not be any source of hidden infection in Jaw or tooth or in gums pocket of elderly.

4. The Jaws Problem

The Jaws and dental arches, as we know, make up the middle and lower thirds of the skeleton of face and so their shape, size and relationship which have fundamental effect on facial form can create problem and in old age definitely indicate some of the character and disability which be ome's unfortunate fate for adolescent due to a muscular atrophy, the teen become, protruding and facial deformities happen. This type of problem is of social pattern and it happens only in those cases where the arches, in the beginning had variations from normal to abnormality. Fracture of the mandible or maxilla

have been noted with the thin bone persons - the thin bone people face problem in mastication with artificial teeth. Benign growth and malignant development and the other problems associated with the old age those who depend upon the smoking and other ill habits.

Prevention to tick doulourcus - trigeminal neuralgia or surgical fracture can be prevented through care at a time of surgical removal of the roots of teeth keeping balance of the body of the mandible or maxilia to avoid the fulcrum at the wrong place and long spicules etc. need to be corrected before denture is provided. Page's disease, Radio nerosis, Restriction Mandibular, Loss of control of mandible and other common problems.

5. Diseases of the Oral Mucosa

This is a common problem in which lesions like macules, papules, nodules, tumours, plaques, vesicles, bullae, pustules, erosions and ulcers may happen in any mouth especially their occurrence is very common in elderly people. Most common is the ulcer because, the oral mucosa is constantly subject to potentially damaging actions of chewing and swallowing of hot and cold, particles of food are dissolved in the saliva. The common situation has been observed in those cases who remain on smoking of various types of drinking of wine, chewing of tobacco in the form of snuff or betel and sharp edged tooth, such ulcers are on progress with the many oral organism. In old age the oral mucosa due to changes in the

body cannot manage to maintain its integrity so successfully in these circumstances and ulcer more frequently happens. The integrity of mucosa is always a result of balance, resistance of the tissues and forces of damaging externally.

Thus the leukemia, the ability of tissue to repair in the presence of traumatic or ineffective influence is severely impaired and ulcer happens. Most of the ulcers are painful and interfere with chewing, swallowing, nutrition and even speech. The treatment of such cases is only palliative and not curative and removal of the cause is the successful treatment.

The recurrent aphthous ulceration in which canker sores, dyspeptic aphthosis, vesicular stomatitis and ulcerative stomatitis and they have been associated with emotional factors, allergy, viral or bacterial influences, hormonal imbalance, trauma, anaemia, nutritional deficiencies, gastrointestinal disturbances and autoimmune reactions (J. Lazdan) 1978.

Many of the aged women over the 65 years have been treated for such ulcers and the method of the treatment was based upon removal of the cause and nutritional deficiencies has taken away with therapeutic doses, the bacterial influences more successfully have been eradicated with gums, curative antibiotics and surgery.

A case of candidiasis with complaint of cough - 70 year female was referred to by physician of top level. On examination the case

the severe ulceration on the tongue and oral mucosa was full of candidiasis infections. The patient was debilitated and socio-economic stresses were available. Laboratory test was carried out, medicine was given healing which took place rapidly, cough disappeared after regular treatment and the treatment was nystatin tablets for 15 days three times a day, and she was given full denture. The patient is regular in life who was very much disappointed.

6. Carcinoma of the mouth

Such cases have been seen over the age of 65. Male and female population equally effected. The treatment in advance cases were suggested radio therapy or general surgery since such lesions have been observed in those cases who were on snuff and betel tobacco chewer, Campaign should be started to curtail such problems among geriatric.

Lichen Planus and Pemphigus, Erythema multiforme are common set lesions especially in elderly persons and they cause much of the inconvenience, tension, anxiety and manifeasance. Some people afford to get their teeth removed to get rid of such problems but the disease is accompanied.

Lichen planus appears as a white patch and erythematous atrophic area in the form of ulcer. Sometime a white pattern composed of multiple confluent may be seen. The lichen planus may affect oral mucosa alone or the skin may be involved. Such lesions precipitated by trauma as it

happens commonly on the cheeks and tongue. Sometime the disease is limited to gingiva in the form of desquamative gingivitis in which gingiva are firely red, glazed with varying degree of ulceration erosion and vesiculation. The disease has been controlled with removal of irritating agencies, sharp edged teeth, smoking, chewing of tobacco, spices and wine and thereby oral hygiene of the mouth upgraded with the process of curretage and course of anti-biotics after culture and sensitivity test. Treatmen has been involved successfully with administration of steriod systemic therapy. However, re-occurrence has been reported in some of the cases. Similar other ulcers of the mouth are commonly treated with elimination of aetiological factor and the treatmen, however, remain palliative etc .

PERIODENAL PROBLEMS

Drifting of Teech

This is relatively common problem due to loss of periodontal support. Spaces appear in dentition and mastication becomes a problem and malocclusion.

Halitosis and altered taste

This is a result of neglect and accumulation and stagnation of food debris, blood and pus around the affected teeth.

Periodontal pockets

The pockets may vary in depth from 4 to 12 mm. and plaque accumulates in depths of the pocket and it can be removed

through surgical operaion, and this deep pocket gives sensation of pain.

Calculus (Tartar)

This is a deposition supra or subgingivally. It is extremely hard and its chemical composition it similar to that of bone. This is due to neglect in tooth brushing. Proper care in removal of calculus and surgical treatment can save the situation.

Malignant Neoplasms

Oral cancer is common in elderly especially in those who chew betal and snuff or it is more in case of smokers. About 40 per cent of such patient die.

Carcinoma is a commonly malignant neoplasms in oral cavity. It sincipence is about 90 per cent of all the neoplasms, commonly it is on the lateral border of tongue and floor of mouth and also it has been observed on the lower alveolar ridges. The suggested treatment has been radio therapy.

Leukoplakia

Leukoplakia is a wide patch which involves male and female and the common sites are of cheek mucosa, angles of the mouth, alveolar mucosa, tongue, lip, hard and soft palates and floor of the mouth. It occurs (mostly with) commonly in the smokers especially those are taking pipes and sagar but incidence of such disease is not very high. Such cases are treated effectively with the removal of he cause with the increase of nutrition and

other facilities.

While the increases in longevity
adds years to life, therefore.

dental health is very important
to add life to years, because it
is of the vital concern for health.

REPRODUCTIVE HEALTH SERVICES PROJECT IN PAKISTAN AND ACCEPTANCE TRENDS OF LIGATION CASES IN NISHTAR HOSPITAL, MULTAN

BY

1 Professor Ghulam Qadir Malik,
MBBS. DPH,DCH(Pb), MCPS(Pak)FRSH(Lond)M.D.(B

2 DR. SHAMIM RAZA BOKHARI
MBBS (Pb), D.Bact(London) M.S. (USA)

3 DR. SYED ZAHID HUSSAIN BOKHARI
MBBS (Pb)., M.C.P.S. (Pak)
M.Phil (Pb, Gold Medallist)
M.R.SH (London)

4 PROF. DR. RAZIA IQBAL
F.R.C.O.G. (London)

Despite the impressive gains in an overall economic growth and progress, Pakistan's standard of living and per capita income are amongst the lowest in the world. About one third of the population lives below the poverty line. Nutritional standards, and hygienic conditions are poor and in most of the areas the drinking water is not available. Health coverage provided in urban areas is inadequate, while it is quite negligible in rural area. Latest census figures indicate that sewerage and sanitation facilities are

non-existent particularly in rural areas. The housing conditions are un-satisfactory as for the majority of the people in the rural areas live in muddy housing which offer little ventilation and protection from rains and floods. In spite of high priority that the nation has accorded to development the unemployment and under employment particularly in primary sector are still common.

The estimated population of Pakistan at about 100 Million is likely to become about 150 million

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1. Professor & Head of Community Medicine Department, Nishtar Medical College Multan.
 2. Professor & Head of Bacteriology Department, PRINCIPAL College of Community Medicine, Lahore.
 3. Assistant Professor, Department of Bacteriology College of Community Medicine, Lahore.
 4. Professor & Head of Gynaecology & Obstetric Department Nishtar Medical College, Multan.

by the year 2000. With the success of population welfare programme, the country will attain replacement level by the year 2030. Based on the present trends the economy would barely sustain the growing population and no significant improvement in quality of life would be seen possible even under the most optimistic assumption. The high dependency ratio arising from the age composition and negligible participation of women in productive employment are already placing heavy burden on the economically active population. Services and utilities such as transport, electricity, water, sewerage and gas would lag far behind the demand and the spectre of shanty-towns and urban squalor would grow, strengthening the concentration of wealth in selected sectors.

Demographic situation in Pakistan.

Estimates of vital rates of Pakistan for 1981-82 indicate a crude birth rate (CBR) of about 42 per 1000 population and a crude death rate (CDR) of about 12 per 1000 resulting in 3% annual rate of population growth which is a matter of deep concern. Although there is an evidence of decline in fertility from an average of 7.5 children per women in 1960-70 to 6.3 for the period 1970-75. Yet there are several factors which interact to maintain a high CBR and consequently a rapid growth of population. These factors include young age structure, a low mean age at marriage (about 17 years) and a concomitant of long exposure

to child bearing period. The second important determinant of population growth i.e. the mortality rate still has considerable scope for declining further due to high infant mortality at about 100 per 1000 live births and prevalence of infectious diseases that can be controlled with better sanitation and other preventive measures. Rapid population increase has thus posed a serious threat to the prospects of attaining a reasonable standard of living of the nation. In the short span of 30 years, over-population has already resulted in high dependency ratio, low labour productivity due to ill-health and malnutrition, over-crowding, shortages of health and educational facilities, high maternal and infant child mortality. It has also put strains on agriculture production in the shape of increase in food demands. The present increase in population has therefore, created grave economic difficulties which can be minimized by reducing the rate of population growth.

The need for implementing an effective population programme and particularly the permanent methods of contraception can not be ignored. It is in this context that a new population welfare programme has been launched where the traditional narrow concept of family planning has been replaced by a comprehensive programme which is directed towards individual well being, family health and responsible parenthood.

Family Welfare Centres and Reproductive Health Services Centres have been opened in the

country to educate clients, to provide a range of population welfare planning services particularly clinical methods and ligation services, maternal and child health services. The clinical/diagnostic facilities have been provided to cover pre and post-natal check-ups and child health services to combat infant mortality, a pre-requisite to lower fertility.

Re-Productive Health Services Project:

Starting with an organized national post-partum programme during 1969 to a well planned Reproductive Health Services Project in the community. The Project provides gynaecological and obstetric facilities, child spacing device and infertility services, aims at assisting women in negotiating their child bearing years safely to produce and rear safely the number of healthy children desired by the couple upon completion of desired family size by the offering contraceptive surgery. The project operates at existing gynaecological and obstetric services delivery points in clinics, medical colleges, government and private and NGO's hospitals. It also has the much needed mobile outreach services for communities. Equipment, supplies and the necessary support are built-in.

The Pakistan Reproductive Health Services Project is designed to reduce the unacceptable maternal morbidity and mortality rates through improved care for the mother. It will help to reduce

infant mortality followed by greater acceptance of planned parenthood. Through qualitative static and extension clinical services the Project will contribute effectively to eventual relief of population pressure.

The Project is functioning through Population Welfare Division own service outlets "A" centres and Tehsil Headquarters Hospital (B Centre) where gynaecology services exist and the payment is made to the hospital and extension team. The number of these centres will be 300 by the end of the Plan Period 1983-88.

ACCEPTANCE TRENDS OF LIGATION CASES IN NISHTAR HOSPITAL, MULTAN

In order to determine the acceptability of ligation method since July 1980, its trends, a study was conducted on the available data at Nishtar Hospital, Multan for the following, main objectives:-

1. To establish acceptance trend of ligation cases before and after inception of Reproductive Health Services Project.
2. To study acceptance trend in districts attached with Nishtar Hospital, Multan.
3. To examine the profile of cases coming to Nishtar Hospital for sterilization.

Acceptance of Ligation Cases:

The data from 1980-81 reveals that surgical sterilization of females

has been gaining momentum. The yearly performance of ligation cases which was reported 1486 in 1980-81 (i.e. from a monthly average of 124 cases) reached to the level of 5161 with an average of 430 cases per month. Index number technique was involved to evaluate a change in performance level at two points viz; before and after introduction of Reproductive Health Services Project i.e. 1983-84. The index of performance

before 1982-83 indicated a slow progress that it only reached to 129 by 1982-83 as compared to 1980-81 as base period = 100. Immediate after 1982-83 there was a significant rise in performance. The index of achievement reached to 227 in 1983-84 and 347 during 1986-87 indicating an increase of about 3 and half times. It may also be examined from another angle i.e. by keeping 1983-84 as base = 100 the performance in 1980-81 was only 44 while it reached to the level of 153 during 1986-87 (Table No. 1).

TABLE NO. 1
YEARLY TUBAL LIGATION CASES COMING TO
NISHTAR HOSPITAL, MULTAN

Year	Yearly No.	Monthly Average	Index No. (1980-81 as base = 100).	Index No. (1983-84 as base = 100)
1980-81	1486	124	100	44
1981-82	1417	118	95	42
1982-83	1922	160 .	129	57
1983-84	3371	281	227	100
1984-85	4494	375	302	133
1985-86	5562	465	375	165
1986-87	5161	430	347	153

TREND OF ACCEPTANCE IN ATTACHED DISTRICTS WITH RHS CENTRE, MULTAN

An important aspect of the study the acceptance pattern in districts attached with Nishtar Hospital, Multan. The data for the latest two years was analysed. The findings reveal that the districts located at long distance viz. Rahim Yar Khan and Rajanpur showed a highest percent increase (90%) during 1986-87 compared with

1985-86. This was followed by Bahawalpur (44%), Khanewal (29%), Layyah (12%) and Dera Ghazi Khan (5%). The performance in Multan and neighbouring districts viz. Vehari and Muzaffargarh showed a decline which was 19% in case of Multan and 20% and 19% for Vehari and Muzaffargarh respectively during the same period (Table No. 2)

TABLE NO. 2
PERCENT INCREASE OF LIGATION CASES
IN DISTRICTS ATTACHED TO
R.H.S. CENTRE MULTAN

S.No. Districts.	No. of Ligation Cases		Percent increase/ decrease
	1985-86	1986-87	
1. Multan.	3175	2283	-19
2. Vehari.	410	402	-20
3. Muzaffargarh	755	614	-19
4. Layyah	359	403	12
5. D.G. Khan	168	177	5
6. R.Y. Khan/ Rajanpur and others.	106	201	90
7. Khanewal.	439	565	29
8. Bahawalpur	150	216	44
TOTAL:-	5562	5161	

Demographic Characteristics.

In order to examine the demographic characteristics, the data for the years 1985-86 and 1986-87 was analysed. Age:- The average age of clients during these two years was 32.9 and 32.6 years respectively. It may however, be pointed out that in an earlier study the average age of the clients for ligation cases was 34 years (Zafar Hayat et al 1982).

of clients reveals that a good majority of clients accepted the method between ages 30-34 years during 1986-87 (45.3%) while this percentage during 1985-86 was 40.8. Similarly the percentage of acceptors in high age groups (40-44) years decreased from 2.7% in 1985-86 to 1.6% during 1986-87. The modal age group during the period 1985-86 and 1986-87 was 30-34 years.

The percentage distribution

TABLE-III

NUMBER AND PERCENT DISTRIBUTION OF
LIGATION CASES DURING 1985-86 AND 1986-87
ACCORDING TO AGE

Age Year	1985-86		1986-87	
	Number	Percent	Number	Percent
20-24	83	1.5	55	1.1
25-29	1370	24.6	1069	20.7
30-34	2269	40.8	2340	45.3
35-39	1690	30.4	1616	31.3
40-44	150	2.7	81	1.6
	5562	100	5161	100

Average Age (1985-86) $X_1 = 32.9$

Average Age (1986-87) $X_2 = 32.6$

[The difference is statistically insignificant.]

No. of Living Children

The average number of living children during 1985-86 was 7.0 which decreased slightly to 6.9 during 1986-87. The average still higher than the one observed in an earlier study conducted in Nishtar Hospital, Multan (2). This average is even higher than National total fertility rate (NFR) at 5.9 children per woman (sixth five year plan 1983-88). However

there was a slight increase in percentage of acceptors having two children during 1986-87 (0.5%) compared with 1985-86 (0.2%). Similarly acceptance is higher parity i.e. 8 children and above reduced during 1986-87 i.e. 39.8% compared with 1985-86 (37.5%) which indicates an acceptance trend on low parity. However more efforts are needed to popularize this method in low parity woman for lowering the fertility levels and achieving the desired demographic goals.

TABLE-IV
NUMBER AND PERCENT DISTRIBUTION OF
LIGATION CASES DURING 1985-86 AND
1986-87 ACCORDING TO NUMBER OF LIVING
CHILDREN

X	1985-86		1986-87	
	Number	Percent	Number	Percent
2.	12	0.2	25	0.5
3	110	2.0	96	1.0
4	521	9.3	489	9.5
5	759	13.5	718	13.9
6	1155	20.9	966	18.7
7	784	14.2	930	18.0
8	874	15.6	760	14.8
9	565	10.2	447	8.6
10	401	7.2	400	7.7
11 & more	381	6.9	330	6.4
	5562	100	5161	100

Average Number of Children (1985-86) = 7.0

Average Number of children (1986-87) = 6.9

Age of the youngest child:

An important factor for ligation is that it should be done immediately after termination of pregnancy. It may be seen that a good majority of cases 30.2% during 1986-87 were ligated within these months of the termination of last pregnancy.

However, 68% of cases were ligated within one year. The average age of youngest child during 1985-86 and 1986-87 was 11.6 months. The percentage distribution of acceptors during 1985-86 and 1986-87 were almost identical Table-V.

TABLE-V

NUMBER AND PERCENT DISTRIBUTION OF LIGATION CASES DURING 1985-86 AND 1986-87 ACCORDING TO AGE OF THE YOUNGEST CHILD

Age	1985-86		1986-87	
	Number	Percentage	Number	Percentage
1-3 Months	1362	28.1	1450	30.2
3-6 "	740	15.3	627	13.1
6-9 "	509	10.5	518	10.8
9-12 "	697	14.4	682	14.2
12-24 "	863	17.8	837	17.4
24-36 "	416	8.6	421	8.7
36-48 "	261	5.3	270	5.6
Net Available	4848	100	4805	100
	714		356	
TOTAL:-	5562		5161	

Average age of youngest child (1985-86) = 11.6 months.

Average age of youngest child (1986-87) = 11.6 months.

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