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DRACONTIASIS—A PROBLEM OF WEST PAKISTAN (A MENACE IN DERAGHAZI KHAN DISTRICT)

BY

*Professor M. Atiqur Rahman Ansari**

and

*Dr. Mushtaq Ahmad Chaudhary***

"Was there once a golden age in which people were free of disease", seems to be a debatable question. The cave man lived in primitive conditions and therefore was obviously exposed to an easy onslaught of pests, parasites and pestilence. Paleopathology has contributed significant evidence and made it clear that disease processes are as old as the life itself and some of the human ailments can be easily traced back to the cave man. Actual marks of certain diseases are clearly seen on the bones of *Pithecanthropos* of Java. The same is true of the skull of the Dawn-man of Piltdown (England). The bodies of the mummies also show that people in those days suffered from the diseases which are now ours.

It is believed that the large parasitic worms, that profoundly effected the health of the early man, were the first to invite the human attention. Observations in isolated primitive communities have shown that more or less every inhabitant suffers from one or the other parasitic disease. The people living in the original home of dracontiasis for instance, most probably were aware of the causative agent of the disease long before memory of man can take him.

The physicians appeared very early in the history of man. The witch doctor was traditionally a father figure in the human society, which was victim of taboo and silly superstitions. The man was very credulous regarding the power of evil spirits. The deeply engraved superstitions affected economical, social and educational outlook of the people. Faith, in the efficacy of charms in counteracting the evil influences, in the power of *dam* and *darud* in evading diseases and potency of *tawiz* and *gandas* in curing dangerous ailments, is still found deep rooted in some section of our society.

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The regimens of both Hippocrates and Galen gave dogmatic advice for healthful living. In contrast to medieval beliefs, of course with the background of magic, witch craft and superstition, the great world religions also made useful contributions to our knowledge of Parasitology. A careful scholar will find salient references of some parasites in Jewish, Christian, Muslim, Buddhist, Hindu and other religious scripts.

The terms used for Guineaworm from time to time in medieval literature bear a testimony to the fact that this helminth frequently troubled the inhabitants of some parts of the Middle East. The Egyptian priests regarded the dracontiasis as an important clinical entity and nick named it the disease of *Medina Serpent*. Moses, who owed his knowledge to the sages of the valley, referred to the scourage in Holy Bible as *Fiery Serpent* that molested Israelites in their sojourn on the shores of Red Sea. The Persian, Egyptian, Greek, Roman and Arabian scripts also make a vivid reference to this disease. The Physicians during Roman period called it the Little Dragon Worm. Agatharchides (140 BC) used the term *Drakontion* for this worm in his illustrious writings. From Plutarch, Galen and Leonides, one may also adduce evidence of the antiquity of the scourage. The celebrated writings of Paulus Aeginus and Avicenna (981-1037 AD) throw ample light on the frequency and antiquity of the disease in the communities living in dry regions of the old world. In the Indo-Pakistan subcontinent it is called *Narwa*.

Guinea worm is an ancient human parasite of Africa and Asia. The endemic centre in Nile valley, Arabia along the Red Sea coast, Uganda, Central equatorial Africa, borders of Lake of Chad, North-West and West coast of Africa, Persia, Afghanistan Turkistan, South-Eastern regions of U. S. S. R., N. W. Guinea and Indo-Pakistan subcontinent are of very long standing. Cases recorded from Indonesia (East Indies) are probably not indiginous. Its introduction into the islands of the Caribbean, Guianas and part of Southern Brazil is also on record. Another endemicity is recorded from Curacao, Demerara, Surinam and Fiji. A case was also encountered in Tanganyika. Slave movement also took the infection to United States. Closely allied species (*D. insignis*) is a common parasite of fox, racoon and mink in the states of Nebraska, Iowa, New York, Pennsylvania, and Ontario. *D. medinensis* is a natural infection in equines, ungulates, canines, felines and primates (gibbon and baboon). Owing to the living methods and superior public health conditions existing in United States, man is unlikely to be infected even if active cases are now introduced in the country.

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Distribution of dracontiasis in Indo-Pakistan subcontinent is extremely patchy. The incidence in the endemic places usually vary considerably from year to year. The prevalence in a village may be as high as 95 percent in some years, while in other years it may drop down to an extremely low level. We have observed that there is neither contiguity nor uniformity in its distribution in a basic unit of administration. It is a serious lacuna in our knowledge and cause of much confusion. Careful recording according to the Thanas or Union Councils is warranted so that its distribution may be properly demarcated and plans to control the transmission and ultimate eradication of the disease may be made in the light of problems of the tract.

In West Pakistan, the scourage may be associated with dry climate. It may be important locally in areas where water supply is from step wells, draw wells, reservoirs and ponds harbouring the specific secondary host (cyclop). Owing to an orthodox method of transmission, the infection may not occur in places, where contact between the infected persons and the source of water supply is either impossible or completely avoidable. There is also no chance of its occurrence in an area where the specific cyclop is not available. Public Health consciousness, better environmental conditions and protected water supply are also contraindicated in the spread of dracunculosis. Health education works well in communities having the means to practice according to the preaching. People enjoying improved Socio-economic conditions are more receptive to words but want a demonstration of the preaching imparted to them. Usually expecting some body else to make a beginning. Initial cost involved in some operations may be deterrent in most cases. Recurring expenditure may also be considered white elephant. Those who have means to do a thing evade because they also have means to get things done on no cost basis. Unfortunately the infected slice of the community, really needing help remains unattended. This helps perpetual propagation of the parasite. The efforts made in looking after the selected section therefore may just go to waste.

Although credit of initiating studies on dracontiasis goes to Bastian (1863) yet careful studies are said to have been actually started by Fedtschenko (1870). In spite of spectacular advances and important progress in our knowledge of this parasite during the last few decades, the scourage still remains mostly unsubdued in vast endemic areas. The method of extraction advocated by Moses is still in vogue. He taught Israelites to extract the worm by slowly winding it round a piece of stick. Paulus Aeginus and Avicenna considered

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it time honoured method when manipulated at slow speed so as to be completed in 10-14 days. As long as traction does not results in rupture of the worm and cause local inflammation, the method still remains *par excellence*.

According to Stoll, 48.3 million people in the world fall a victim to dracontiasis. High incidence has been recorded from Asian-countries (30 millions,). In Africa the number of sufferers is more or less half of this number. The balance of 3.3. millions, however occurs in U. S. S. R. The cases recorded from North-Eastern part of South America and West Indies are not included in these estimates. The infection, due to protected water supply, has now died out in tropical America.

Although it is stated in most text books that the dracontiasis does not occur in children under four years, yet the experience shows that no age is immune to infection. From the epidemiological data in hand, it may however be concluded that the infection in endemic areas may be acquired on the day an infant is given the contaminated water to drink. It is on record that a baby girl, aged 6 months, developed fronto-nasal tumor due to the infection of the orbit. A perusal of epidemiological data, collected from various endemic areas from time to time, will show that incidence usually predominates in adults of 19-40 years of age. The peak cases however occur in 30-35 years of age group. Immunity is said to develop after 3-4 years of infection and therefore only odd cases above 40 years are usually encountered. Number of people who suffer for more then 4 years is meagre. Irrespective of age, the over all incidence in endemic areas may vary downward from 100 percent. Most of the cases begin to appear in the month of April and the number steadily swells till a peak is attained in September.

The worm has no special aptitude for any particular part of the host-body. The directional movement of the adult worm is towards that part of the host-body which frequently comes in contact with water. It may be found on the back of a washerman and on the arm or hip of a women who lifts pitcher in between. However, in 90 percent cases the ulcer may occur on the legs, mostly in the vicinity of the ankle. In large number of cases only one worm may appear at one time, 2-3 worm may also be frequent. In rare instances more or less 50 worms may be found at a time.

In the desert belt of Indo-Pakistan subcontinent in general and in scattered areas with water scarcity and faulty water storage system in particular, the Guineaworm disease may still figure prominently. It is not out of place to
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mention that there is no contiguity of distribution in any district and no particular tract as a whole should be tabooed. No one country has ever been found involved in full in the past and should not be expected so in future either. The same has been found to hold good for an administrative unit in a country. It is therefore very wrong to say that district Campbellpur in West Pakistan for instance is an endemic area. This statement means that an area of 4148 Square miles is full of Dracontiasis, which is far from truth. It is no wonder to find that some of the available reports present a distorted impression to one who is not conversant with the ecology of the area and the epidemiological requirement of the parasite. The favourable environmental conditions may suit the distribution of the parasite when the socio-economic conditions of the community are also competent. A community with better socio-economic status can improve living conditions and evade infection.

In the West Pakistan, dracontiasis is endemic in the district of Campbellpur, Dera Ghazi Khan, Muzaffargarh, Mianwali and Tharparkar. From the hospital and dispensary figures, one may suspect its wide spread in the province, even in districts which are epidemiologically unsuitable for its maintenance and transmission. The cases from endemic areas may come into the safe territories, but due to safe water supply and absence of vector the menace has little chances to spread. It is fallacious to assume that the disease has any chance to establish and disperse for example in a district like Lahore. It is also wrong to say that the disease is widely distributed in an endemic district. According to our observation the distribution is patchy even in highly endemic areas. This state of affair warrants rapid surveys of the endemic areas. The district authorities may be advised to initiate a pilot project and assess the severity of the disease. The chief sources of infection must be ascertained and plans to prevent the spread of the disease may be prepared.

It is important to remember that primitive methods of living, low socio-economic level and poor health consciousness in the people are the root causes for the persistent occurrence of dracontiasis in the communities living in endemic patches. Removal of illiteracy and ignorance will not help because community has no means to practice according to the preaching. Poverty has not only lowered their ability to resist the invasion but has also reduced chances of improving water supply. The principle of self help would not work. The Government, the public health workers in the private sector and philanthropists have to join hands and pledge to eradicate the scourge from the hard hit

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slice of our nation. As far as possible alternate arrangement for the supply of the potable water has to be made, even at a colossal cost and use of contaminated water from plague spots has to be stopped. As an alternative practice, the people should be encouraged to resort either to boiling or to straining water before drinking. For this purpose "water-boiling" centres or "straining depots" may be established at the supply points. Distribution of fool proof sieves, which can be used from one side only, have to be provided.

In West Pakistan dracontiasis is endemic along river Indus. Scattered endemicity may also occur in Dera Ismail Khan, Dera Ghazi Khan, Banu, Mianwali, Muzaffargarh and Campbellpur districts. Cases also occur in several taluqas in North-West Frontier region along the tribal belt. Salient features of some endemic districts known for high incidence of dracontiasis, are given in the para below. Epidemiological data was not available from some regions and true position could not be ascertained.

From the following note it is found that the shortage of drinking water is the crux of the problem. Wherever flood water and hill-torrents are the source of storage, dracontiasis has all the chances to establish, provided all the other requirements are also available.

It is high time that a systematic survey of these vast districts is carried out and endemic tracts are fully ascertained, and villages hard hit with the disease within the district are defined and demarcated. This fact finding project will facilitate planning of an eradication project. The schemes will vary from place to place. Depending upon the local problems, it will become easier for the local health authorities to see which method will suit best for a particular region. For some areas probably safe water supply, even from long distances, will be the only solution while in others however, simple disinfection and disinsection may be feasible and effective method for the CDC department of the country to consider.

THE ENDEMIC DISTRICTS

1. *Dera Ghazi Khan* lies between North latitudes $28^{\circ}-20'$ and $31^{\circ}-15'$ and East latitudes $69^{\circ}-35'$ and $70^{\circ}-59'$. The district is divided into three tracts. The Pachodh tract stretches along the base of the hills, where the subsoil water is bitter and brackish, therefore the people of the tract continue migrating into either hills or to the canal or riverine. Water Supply largely depends upon rain water brought down by hill torrents from the adjacent Suleiman

hill ranges. It is collected in temporary reservoirs for drinking. This water collection does not last very long and therefore, the people are obliged to leave the tract as soon as impounded drinking water is exhausted. Most of the population lives in hamlets or small concentrations near water collection. Three large torrents, rising from the West of Suleiman hills, traverse the district; WIIHOWA is most northerly, SANGHAR emerges near the village of Mangrotha (Central Western boundry of Taunsa tehsil) and KAHHA appears near Harrand (Jampur Tehsil). Water collected from hill torrents is usually exhausted in three to four months.

The climate of the tract is extremely dry, both in hills and plains, in summer as well as in winter. December to January is winter. November and February are pleasant months, when minimum night temperature may fluctuate between 40° and 50°F. In March, the days warm up and minimum night temperature is seldom below 60°F and may often reach 70°F. From May to August the heat is intense every where and especially in Pachadh. Record maximum temperatures are well marked, night minimum rarely falls below 80°F. August is generally steamy and hot. September and October heat is less oppressive. Rain fall is meagre, average for the last five years has not been more than 0.5".

2. *Muzaffargarh*: lies between North latitudes 29° and 31° and East longitudes 70° and 71°-5'. The district falls in two tracts viz., inundated and non-inundated. Thal is spread over Kot Adu and Muzaffargarh Tehsils. It arises above the Indus river, which was all desert before Thal canal. The Indus flows along the Western Boundry, while Chenab flows along the Eastern side.

The Thal tract is extremely dry all the year round. Water in most wells is brackish. The fiery heat is intolerable and hot winds increase the discomfort. It is fairly cold during November to February. Winter is bracing. Rainfall increases from North to South.

3. *Mianwali*: Lies between longitudes 71° and 72 and latitude 31° and 33°. The hills, which are useful, mainly as catchment areas, are the main features of the northern tehsils. These hills are useful mainly as catchment areas, supplying water through hill torrents to the plains. The lands above high banks of the river depend mainly on water from the hills or local rainfall. The salt range runs from Kalabagh to Sakesar. The Indus pierces the salt range immediately above Kalabagh and flows through the district. Kurram is another formidable stream entering Isakhel Tehsil and flows almost East through the Southern part of the Tehsil. The main mountains and hills are the salt range at Kalabagh, Sakesar hills, Bhangikhel and Khattak Niazi. Maidani and Dhok ranges are bare and rugged. The uplands in Mianwali and Isakhel are cut up by hills torrents. The tract looks desperately arid particularly in a year of drought.

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The maximum temperature in summer is 115°F and minimum is 65°F. The summer mean being 90°F. June, July and August are hottest-months. Maximum temperature in winter is 65°F and minimum is 41°F, which gives a mean of 53°F. Annual rainfall of the district is more or less 15" inches.

4. *Campbellpur* : Lies in longitudes 71°-17' and 73°-5' and latitude 32°-31' and 34°. Western portion is rough and plain country, lying between Indus and Jhelum rivers and under the mountains of Hazara. The Gandger mountain of Hazara district projects into the North of Attock Tehsil. Only lower slopes fall in Campbellpur.

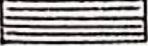
Soan river arises in Murree hills and enters Fatchjang Tehsil. It inundates considerable areas of the district. Numerous wells are sunk along its bank. Haro river traverses Attock Tehsil. Large areas are irrigated by cuts in this river. Indus river passes in the North-Western corner of the district. It is of no use for irrigation in the tract. Ankar, Hazro, Jablot, Kala and Ghabir are some of the small streams passing through the district. These are too deep to be of any irrigational use. Extremes of heat and cold are severe. The high upland plateau is baked under hot sun in summer. A bitter north wind prevails in winter. Summer heat is most intense and unbearable in western part. October and November are delightful months. Average rainfall is about 13" a year.

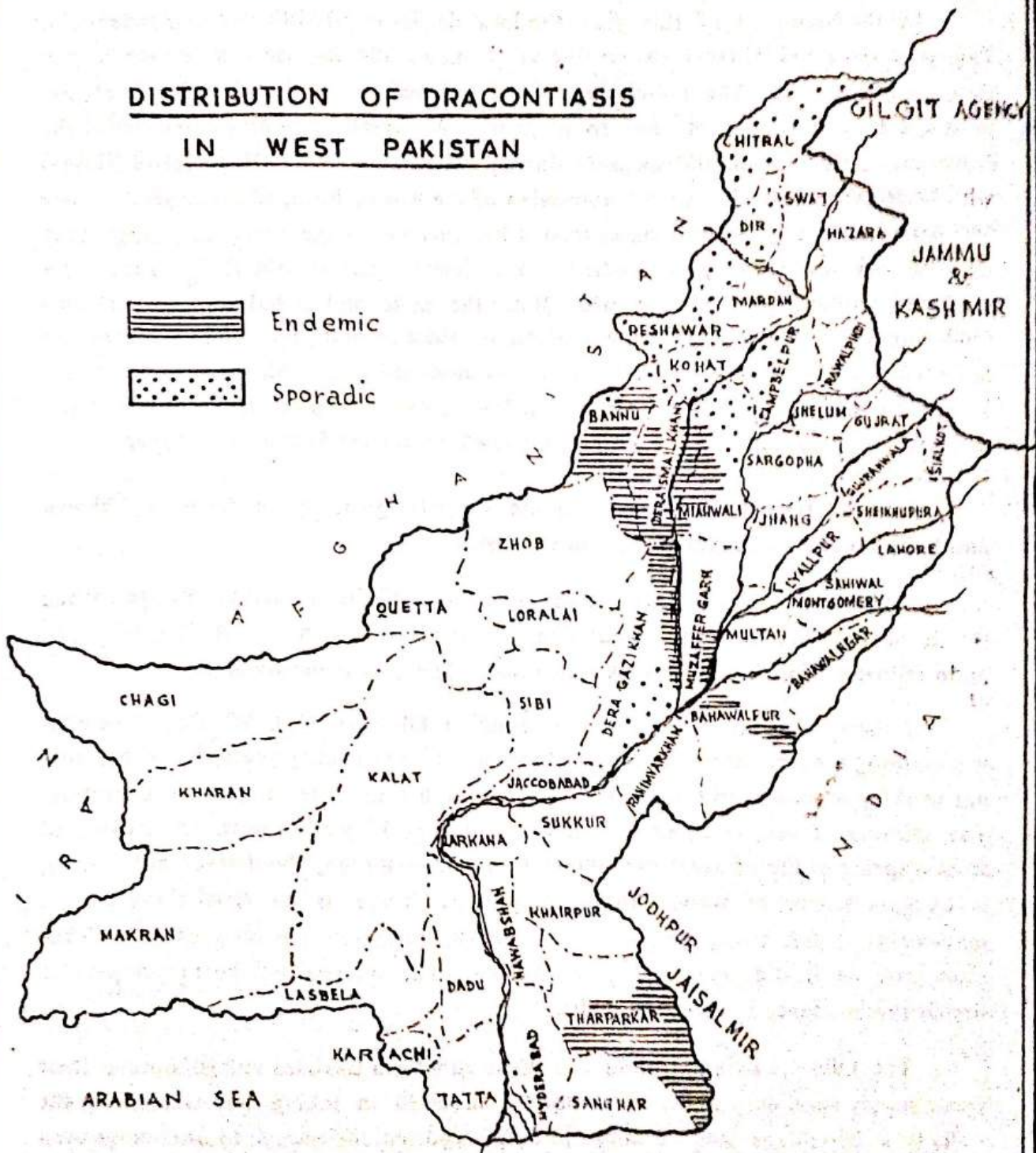
5. *Tharpakar* : Lies between North latitudes 24°-13' and 25°-22' and East latitudes 68°-40' and 71°-71'. The Western portion of the district (Parker) is under irrigation while Eastern portion is desert (Thar). The Eastern Nara canal is a natural inundation stream, originatings from Indus near Sukkar and draws a line of demarcation between the two tracts. Extra ordinary salinity of the subsoil and consequent difficulties of finding water fit for drinking, renders large part of the tract quite uninhabitable. South eastern area bounded by Rann of Kutch and Jesalmir is predominately inhabited by low cast hindus, who freely move across the border and bring in dracontiasis from Rajisthan border. A few decades before 1947 the tract became free of the scourage, God knows, how, it remained free of the infection for forty years but it reappeared in 1948 and is rampant since then.

The climate in the irrigated portion is temperate, neither exceedingly hot in summer nor very cold in winter. Highest temperature may go up to 120°F in summer. Thar has tropical desert climate. There is paucity of Potable water. Wells are 150-250' feet deep and provide bitter water. The people are obliged to use this supply for three quarters of year. The rain water, accumulated in low lying points (Terai) in the bed of desert streams, is sweet and therefore preferred even if it becomes stinky. The temporary collections usually last for about 2-3 months in a year. Rain fall varies from year to year. Lowest in a year may be 6 cents while highest on record is 40 inches.

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DISTRIBUTION OF DRACONTIASIS IN WEST PAKISTAN

 Endemic
 Sporadic



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DRACONTIASIS IN DERA GHAZI KHAN

In the beginning of this year the local dailies referred to a *Narwa* endemic in Taunsa Sharif (D.G. Khan.) According to the news, the disease is a menace of long standing in the area. The population of the infected area are beating their breasts in despair since some time but to no avail. Although only nine cases visited the Government aided hospital/dispensary during 1967–68, a sage (Haji Karim Nawaz) who is well versed in the art of extraction of the worm, handled successfully some 600 patients. The number of cases treated by other indigenous surgeons (*Jerrah*) may also be not less than some hundreds. For female patients, the Haji has trained a woman worker, probably his wife. Both the male and female workers are now rendering a yoe man service to the community since several years. The patients are attended to as a moral duty and not for any monetary gain. All the inhabitants are now familiar with the disease and call it *Narwa*, *Irq-i-Madni* or *rassa*. On receiving this data, a rapid survey of the ilaqa was carried out during February this year.

Infected Area :—Guineaworm disease is widely spread in the town of Vehawa and Lakhani and surrounding areas in the district.

Vehawa is a small town, situated at the foot hills of Suleman Range to the North of the district. The population of the plains does not exceed 20,000. The main industry, rains permitting, is agriculture. The area is mostly arid.

Existing Source of Water : The Building Division of C.W. Department is maintaining a water supply scheme for the town since last thirty years, At present it is not working according to the plans. The purification plant is in dilapidated condition. The chemical dosing equipment is not in proper working order now. A stream, fed from a spring of the adjacent mountains of Suleman Range, about seven miles away, is the main source of water supply at present. There is no restrictions on the movement of the ailing people. The guineaworm therefore is propagated with the same ease as it did scores of years before. The intermediate host (cyclops) also breeds in abundance in these reservoirs.

The villagers living around Vehawa town and in Lakhani village obtain their water supply from deep wells. The process involved in taking out water from the wells is a herculians job, sternuous in nature and tedious enough to discourage even a very persistent person. Ordinarily the people prefer to obtain water from sources which are easily approachable and menupulatable. Rain water collected in small ponds is therefore preferred over other sources. The terai water supply does not last for more than 2–3 months in a year. The impounded water begins to

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stagnate even during this short period of storage. High rate of pollution renders water stinky yet it is given preference. Sweet water contained in these reservoirs is the main attraction.

At the time of the visit, most of these ponds were running dry. Water samples taken from the shallow beds revealed the presence of plenty of cyclops. However, no infected specimens were found in this lot.

Consensus of Opinion : According to the indigenous physicians (*Hakims* and *Jarrah*) practicing in the area, the guineaworm disease is one of the dreaded scourge of *ilaga*. It is cause of much suffering, even amounting to permanent disability. In addition to morbidity and mortality, either due to multiple infection or injury to a vital region, may also occur. A perusal of the records maintained by a local person gives a ghastly pictures. The local *Hakim* extracted worms from 1200 patients during the last six months. He provided unstinted service to the people of Vehawa, Lakh and adjoining villages. His reputation has spread far and wide now and his sphere of treatment is spreading steadily. It was revealed to the survey party by him that the people avoid going to the dispensaries probably because they were afraid of surgical procedures. Here with him however, the local man finds homely atmosphere, a congenial environment and absence of bossism and red tappism. The brotherly treatment and loving attitude of the man attract the villagers.

It will not be out of place to mention here that the statistical data of guinea-worm disease available from the dispensaries and like wise, collected in the statistical sections of the Health Directorates are far from reliable. Where as one may find it recorded from districts like Lahore, no mention is made of the disease from the district where epidemiologically speaking the disease should be endemic. It is therefore desirable that the district health officers should initiate surveys in the endemic areas within their jurisdiction and provide salient information on its, distribution without further loss of time. Since we have A.D.H.Os. in various districts now, pilot surveys can be initiated with ease and the fact finding projects can be made a routine feature of their activities without any extra load on the public exchequer. The Government is seriously considering to initiate Communicable Disease Control work in the Province. The C.D.C. Officers, when appointed, will have to do lot of spade work for knowing the problems of a tract. The rural health centres could do yoe man service, if in addition to curitive work, the doctor-in-charge could organise a survey of the *ilaga* and plot important health problems of the people. A C.D.C. pilot project can be started in these small unit with no extra cost to the Government.

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Seasonal Prevalance : This disease has loose periodicity. Most of the cases usually start appearing by the month of April and continue increasing in frequency steadily till a peak is recorded in the month of September. Here after there is a lull and the number of cases visiting the rural surgeon considerably decline both in number and severity. The multiple cases are usually more common during the peak period. The worm, in the largest number of victims, appears either in the upper or the lower limbs. The neck, thorax, abdomen and scrotal region is usually involved in rare instances. Dracontiasis of tongue and shoulder is also on record.

The transmission rate in dracontiasis is directly proportionate to the numerical density of the cyclops in the terai. The infected cyclops being heavier, go to the bottom of the pond. The quantity of water contained in it also will play an important role. Maximum number of transmission cases will occur when the terai has scanty of water. In other words, "*greater the frequency of infected cyclops in each draft of water, greater the chances of new infections*". Both elimination measures and extermination methods are crux of eradication of the scourage. For routine protection of the community, the use of water from the danger spots should either be completely stopped or arrangements for its suitable treatment be made. These objectives cannot be achieved fully without serious action at the governmental level and active participation of the societies interested in public uplift work.

The man with clinical symptoms is the chief cause of the trouble. This source contaminates the water supply. Effective legislation to restrict the spread of the scourage from the source has to be attempted with all seriousness in the endemic areas. For this purpose the water supply points should have to be declared *out of bound* for the active cases in particular and others from the endemic areas in general. For prevention of propagation of filarid worms, the bathing, wading and working will have to be prohibited by law. This objective warrants complete cordoning of the water supply sources. A round the clock watch and ward post will have to be established. Much cannot be achieved without proper arrangements for careful processing of water before supply to the consumer. Either the water will have to pass through a fool-proof sieve or boiled before supply. Chemical treatment of the water may also give good results. Chlorine and Copper Sulphate have been used with success in many countries. Planting of suitable fish in ponds with copious amount of water may also work fairly well. Possibilities of installing alternative methods of water supply may also be looked into. Safe water supply is the salient aim and the methods and means to be adopted will vary from place to place.

The area surveyed, fulfills epidemiological requirements for the maintenance of dracontiasis. The habits of the community favour both the exit of the worm in

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a proper place and the picking of the infective cyclops by the susceptible persons. The suitable alternative host is in abundance and the man on the spot, provides liberal facilities for the onward submission of the parasitic to the least protected and susceptible individuals. Every one in the endemic ilaqa is culturally indifferent and economically predisposed to infection. The community accepted the worm as a matter of routine. Try, what one may, the dracontiasis is still considered to be natural product of human body by some. It is viable wart or a boil arising from within due to agnostic and skeptical deeds. For most of them all is God sent punishment and an astrological constellation.

Due to ignorance, apathy and lack of facilities, the people do not strain nor resort to boiling even when repeatedly told to do so. Obviously the viscous circle has provided a firm foot hold to the helminth. Eradication, though simple and straight, will not be possible till such time that the benign government takes appropriate action in the right direction. The disease is preventable in the area. Certain advantageous realignments have to be made. The first great problem is the organisation of team work. Looking after the diseased persons is an important feature for its effective control. Prolonged campaign has to be planned on several fronts to check its reintroduction from other regions. The disease remained absent for a long time in that region and due to lack of proper vigilance was reintroduced from Kajistan desert again in 1948. Neglect of this aspect in the planning will be an efficient cause of failure of operations. It is therefore necessary to conduct sanitation on a grand scale. These are not the days of isolation. The world is now an economic unit. The adverseries, even of an insignificant tract, have to be fought on international level for national footing. The slice of our population, which is socio-economically incapable to handle a situation or is not prepared to win over a struggle by itself, must have to be rendered unstinted help by those who are awake to the responsibility on humanitarian grounds.

Health Education of the masses is a continuous process. The people must know what is dangerous and how these dangers can be evaded and avoided. For eradication of any scourage both elimination measures and extermination methods have to be carefully and rigidly adopted. Without active participation of the governmental agencies and philanthropists nothing tangible can be expected from the community involved.

The man with clinical disease is the chief source in dracontiasis. Transmission to the susceptible host is affected after ingestion of infected arthropod. Nothing would happen as long as contamination of water supply continues to occur. An

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embargo is therefore essential at this stage. Strict legislation to restrict movement of the cases should be attempted in the endemic areas. For this purpose the water supply points should be declared "Out of bound" for all the clinical cases. As long as *bathing, wallowing, wading and washing* is not prohibited by law, the *to and fro* movement of the loathsome filarid cannot be effectively stopped. To stop contamination of the water ponds and reservoirs will have to be cordoned and a watch and ward post must have to be established. A *thikri perah* type, arrangement may also work well. This is a self help method involving minimum expenditure but may give extremely good results. It requires awakening of the community and inculcating an attitude in the democratic society that disease can be eliminated with active participation, cooperation of masses and coordination of efforts.

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Table showing temperature (Deg. Fahrenheit) mean humidity (Percent) and rain fall (inches)
in Dera Ghazi Khan, Muzaffargarh, Mianwali, Cambellpur and Tharparker Districts

in 1960

	January	February	March	April	May	June	July	August	September	October	November	December	Mean
MUZAFFARGRAH													
Mean Temp. ...	—	—	—	75.1	80.3	89.7	85.6	86.5	85.7	72.8	—	—	82.2
Mean Max ...	—	—	—	96.0	104.5	112.3	99.8	102.5	99.1	95.6	—	—	101.4
Mean Min ...	—	—	—	65.7	73.4	80.7	79.9	81.9	78.6	67.4	—	—	75.3
Mean Hum ...	—	—	—	—	—	—	88.0	86.8	80.0	74.0	—	—	82.0
Rain Fall ...	0.75	0.07	0.30	0.33	0.93	0.25	5.53	0.15	1.47	0.16	0.20	0.81	10.90
MIANWALI													
Mean Temp ...	41.0	52.6	58.3	67.5	85.1	93.4	89.8	88.8	83.5	70.8	53.2	42.7	68.9
Mean Max ...	65.7	78.5	74.2	86.5	104.0	111.2	102.2	100.2	100.8	94.9	81.9	72.9	89.4
Mean Min ...	—	48.4	52.7	59.6	71.4	81.5	82.9	83.1	76.0	63.0	48.5	38.6	58.8
Mean Hum ...	87.0	77.0	84.0	72.0	44.0	46.0	65.0	67.0	62.0	55.0	64.0	67.0	66.0
Rain Fall ...	1.52	1.03	0.62	1.22	0.97	0.26	7.65	1.46	1.53	0.97	2.28	0.31	19.82

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	January	February	March	April	May	June	July	August	September	October	November	December	Mean
CAMPBELLPUR													
Mean Temp ...	41.4	47.2	58.4	74.3	80.9	90.4	87.6	83.0	88.8	68.1	52.1	47.4	67.9
Mean Max ...	—	67.6	—	—	98.1	107.8	100.0	—	—	—	74.7	—	89.6
Mean Min ...	39.6	39.7	51.1	65.5	70.0	78.0	79.8	—	58.0	46.3	35.8	—	52.2
Mean Hum ...	83.0	68.0	71.0	50.0	48.0	29.0	71.0	65.0	79.0	—	69.0	77.0	59.0
Rain Fall ...	4.44	2.30	1.08	1.23	1.37	0.43	11.61	4.77	4.57	1.43	3.58	0.76	27.6
THARPARKER													
Mean Temp ...	50.7	50.6	68.6	78.5	84.5	85.2	85.1	82.3	81.2	75.6	64.3	53.1	72.1
Mean Max. ...	78.0	84.9	95.7	103.9	108.3	105.5	99.0	95.1	96.7	97.3	91.2	81.0	94.7
Mean Min ...	46.4	50.1	61.9	69.3	77.0	81.3	80.4	78.3	75.5	67.1	55.3	45.5	65.7
Mean Hum ...	70.0	66.0	99.0	66.0	71.0	74.0	77.0	83.0	82.0	75.0	70.0	73.0	73.0
Rain Fall ...	0.89	1.02	0.20	—	0.90	1.51	8.79	19.61	0.87	—	—	—	11.79
DARA GHAZI KHAN													
Rain Fall ...	0.72	0.07	0.58	1.00	0.71	0.15	3.12	1.72	0.93	0.20	0.75	0.98	10.93

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HELMINTHIC INFECTIONS IN A NEO-URBAN POPULATION, NEAR LAHORE

By

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INTRODUCTION:

Intestinal worm infections form one of the most important and common group of communicable diseases and have a long history of endemicity in the sub-continent in general and probably Lahore in particular. The importance of such diseases can not be over emphasised, because these are unremittingly corrosive in action and constitute a steady drain on the vitality of the victim. The characteristics make these helminths a major humanitarian and economic problem for some tracts.

The prevalence of intestinal parasites in Lahore has become evident, through recent observations made by Ahmad (1964). Ansari and Sapru (1963—64) and Ansari, Naru and Chaudhary (1968). Although low standard of hygiene, poverty and ignorance are root cause of infirmity yet cases of helminthic infection may be common even in Lahorites enjoying better socio-economical status and living in clean localities. A clean community within an unclean whole cannot be thought of by a hygienist.

Village Sodhiwal is situated on the Bund Road, off Multan Road. Qadirpura, a Mohalla of this locality was selected for this study. This Mohalla is like any other sector in the area. The choice of this Mohalla was however, made mainly because comparatively better cooperation from people was forth coming.

Total population of Qadirpura is more or less 500 people, living in about 100 houses. The houses are mostly *Pakka* but are usually built without much regard to sanitary requirements. Over crowding in dark, dingy and poorly ventilated houses adds to the problem. Streets are not paved, open drains run all along the streets and stinky sullage water is one of the special features. Water supply is unprotected and unclean. It is coming either from hand pumps or insanitary wells. House hold refuse is dumped in the court yard or door yard.

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People usually go out in the fields for defecation. Defecation by children is proverbially promiscuous and cause of contamination of the human habitats.

Some houses have latrines but with inadequate arrangements for the disposal of excreta. It may irregularly be cleaned, say once a day by the sweeper. Breeding of house flies and contamination of food and water is a common feature. Chances of infection, repeated infection and heavy infection are apparent.

Most of the people of Qadripura are farmers. There are a few Government officials also. The average annual per capita income of the area may not exceed Rs.200. Malnutrition, illiteracy and ignorance may partly prevent much needed improvement. Customs, food ideologies, attitudes to life and death, indigenous medical beliefs have specific significance and posing indirect effect on the incidence of helminth infections.

Fields near the area are used for fodder raising and vegetable growing. For irrigation purposes sullage and sewerage water is used. This practice encourages spread of helminths in the community.

Most of the people frequently go about bare footed. Those who frequently loiter in the fields, the cultivators in particular, are liable to get hookworm infection. Consumption of raw vegetables from the sullage farm may apparently help the transmission of the roundworms.

There is no school in Qadripura but in the village Sodhiwal there is Primary Girls School. There is no hospital or dispensary nearby.

Eatables like sweets and vegetables (that are consumed in raw form) are invariably kept uncovered by the vendors of the premises as well as in the near by areas. Swarm of house flies, being highly prevalent, invade nook and corner of the locality and have an easy access to the food articles in general and sweetmeats and cut fruits in particular. Consumption of contaminated and polluted food articles is thus common.

Material and Methods : In all 204 stools specimens were collected. This amounts 50 percent coverage of the Mohalla.

A laboratory assistant daily distributed screw-capped small bottles with blank "datatickets" to the families. Next morning these samples were collected and clean empty bottles were distributed to the families next in line.

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The bottles containing stools were immediately brought to the parasitology laboratory. A simple saline and an iodine stain preparation of each specimen were examined. No culture or concentration methods were used. Therefore these results may be considered conservative. These investigations were carried out during 13th March, 1969 through 25th April, 1969.

Results : Stools of 103 males and 101 females were examined. A total number of 124 (60.75 percent) males and females were found harbouring one or more parasites. The breakup according to age and sex of the group is given in Table 1. A perusal of this data will show that hookworm, roundworm and dwarf tapeworm infections predominated in this group.

TABLE 1

Age and Sex Incidence of Common Parasitic Infections in Qadirpura (Sodhiwal) 1969.

Age group	Male			Female			Total		
	No.	Positive	Percent	No.	Positive	Percent	No.	Positive	Percent
0-1	—	—	—	—	—	—	—	—	—
1-5	12	6	50	8	4	50	20	10	50
5-20	53	36	67.92	61	39	63.93	114	75	65.79
20-60	37	21	56.76	31	18	58.06	68	39	57.35
Above 60	1	—	—	1	—	—	2	—	—
Total	103	63	61.17	101	61	60.40	204	124	60.75

More over table 1 will also show that the incidence of helminths, both in males and females, was highest in 5-20 year of age group. Next below was the age of 20-60 years and it was followed by age group of 1-5 years.

No stool was available from the age group of 0-1 year. It is general anthropological belief that these ages are subject to charms and incantations and therefore the villagers will not give the stools of children. Even persuasion will not work. No male and no female in the age group above 60 years was found positive.

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ANCYLOSTOMA DUODENALE INFECTIONS

The hookworm was found to be the most prevalent helminthic infection. The over all infection rate was 27.45 percent. Considering that no concentration technique was used, this was a high incidence. The infection was 30.1 percent in the males and 24.75 percent in the females. The difference is insignificant.

The incidence in the age group of 5—20 years was comparatively more in the males than in the females, while in the age group of 20—60 year the incidence in both the sexes was more or less the same (Table No. 2)

TABLE 2

Age and Sex Incidence of Infection with *Ancylostoma duodenale*
in Qadirpura (Sodhiwal) 1969

Age group		Male			Female			Total		
		No.	Positive	Percent	No.	Positive	Percent	No.	Positive	Percent
0—1	...	—	—	—	—	—	—	—	—	—
1—5	...	12	1	8.33	8	1	12.5	20	2	10
5—20	...	53	18	33.39	61	14	22.95	114	32	28.7
20—60	...	37	12	32.43	31	10	32.26	68	22	32.35
Over-60	...	1	—	—	1	—	—	2	—	—
Total	...	103	31	30.10	101	25	24.75	204	56	27.45

ASCARIS LUMBRICOIDES INFECTION

The roundworm was the next commonest helminth detected in the group. Over all incidence was 16.18 percent. Age group of 1—5 years was maximally involved. Both in boys and girls the positive cases were 25 percent. Next group in order was the age group of 5—20 years. The incidence was 20.75 percent in males as against 21.93 percent in females. The incidence declined in higher age groups, 8.11 percent males in the age group of 20—60 years harboured roundworm while the

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females were found free. No male and no female above 60 years had ascariasis. (Table No. 3).

TABLE 3

Age and Sex Incidence of *Ascaris lumbricoides* Infection in Qadirpura (Sodhiwal) 1969.

Age group	Male			Female			Total		
	No.	Positive.	Percent	No.	Positive	Percent	No.	Positive	Percent
0—1	...	...	...	...	...	...	...	...	...
1—5	12	3	25	8	2	25	20	5	25
5—20	53	11	20.75	61	14	22.95	114	25	21.93
20—60	37	3	8.11	31	...	...	68	3	4.41
Over—60	1	...	...	1	...	...	2	...	...
Total	103	17	16.50	101	16	15.84	204	33	16.18

HYMENOLEPIS NANA INFECTION

The dwarf tapeworm was found in 11.27 percent people examined. The percentage of infected persons was highest in the age group of 1—5 years (15 percent). It steadily declined in the higher age groups. In the age group of 5—20 years the incidence was 13.16 percent, while in the age group of 20—60 years, its incidence was 7.35 percent only. In all age groups, the males were infected more frequently than the females. (Table No. 4).

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TABLE 4

Age and Sex Incidence of *Hymenolepis nana* Infection in Qadirpura
(Sodhiwal 1969)

Age group	Male			Female			Total		
	No.	Positive	Percent	No.	Positive	Percent	No.	Positive	Percent
0-1	...	...	...	...	...	...	...	...	...
1-5	12	2	16.67	8	1	12.50	20	3	15
5-20	53	10	18.87	61	5	8.20	114	15	13.16
20-60	37	4	10.81	31	1	3.23	68	5	7.35
Over-60	1	...	...	1	...	...	2	...	...
Total	103	16	15.53	101	7	6.93	204	23	11.27

Conclusions : The population of village Sodhiwal is behaviouristically both Urban and Rural in character. The result is that both *Ancylostoma duodenale* and *Ascaris lumbricoides* are highly prevalent. It will be interesting if the results are compared with two previous studies, one of which was conducted in purely urban area and the other in purely rural area.

In a study in Rang Mehal area of Lahore City, the incidence of roundworm was 13.4 percent and that of hookworm was only 0.9 percent (Ansari et al 1968). In a purely rural area of Lulliani the incidence of roundworm and hookworm was 1.21 percent and 26.38 percent respectively (Ansari et al 1968).

In the present study in Sodhiwal, the hookworm was found in 27.45 percent and roundworm in 16.18 percent of the persons examined. Depending upon local circumstances, this does not seem to be at all surprising. Presence of vegetable fields, irrigated by untreated sewerage water, people going out in the fields for defecation, their roaming about bare footed, and lack of consciousness on the part

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of the population for healthful living, all amply contribute towards high incidence of hookworm.

Common practice of plucking raw vegetables viz, carrot, raddish and turnip from the fields and eating either after rinsing in small amount of water or cleaning with a cloth, or freely, consuming eatables viz sweatmeats, ganderies cut fruit, gur, shakar and sugar accessible to flies, favour the incidence of roundworms in the locality.

As regards the dwarf tapeworm infection, it has been found to be fairly highly prevalent in almost all studies from Lahore. In Lulliani town it was found in 12.56 percent of the people examined, while in Rang Mehal area of Lahore City the percentage of the incidence was 10.91 percent.

In the present study in Sodhiwal, its incidence was found to be 11.27 percent. This is again due to poor sanitary conditions and lack of personal hygiene.

We have not made any mention of *Enterobius vermicularis*, which was detected in 3 boys only.

It will not be out of place to refer to *Giardia intestinalis* (3 males, 10 females), *Entamoeba coli*. (6 male, 14 females) and *Iodamoeba butschlii* (4 males, 12 females) which were recorded in these studies. The distribution of these parasites is given in table 5 for reference.

TABLE 5

Age Incident of Common Protozoa Infections in Qadirpura (Sodhiwal) 1969

Age	Number examined	<i>G. intestinalis</i>	<i>E. coli</i>	<i>I. butschlii</i>	Total protozoan infection
0-1	...	...	...	...	...
1-5	20	1 (5.0 %)	1 (5.0 %)	...	2 (10.0%)
5-20	114	7 (6.14%)	7 (6.14%)	8 (7.01%)	22 (19.3%)
20-60	68	5 (7.37%)	12 (17.65%)	8 (11.77%)	25 (36.8%)
Over 60	2	...	...	...	...
Total	204	13 (6.37%)	20 (9.81%)	16 (7.84%)	49 (24.1%)

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**SCURVY (SCORBUTUS) AND SUB-SCURVY STATE A RECURRENT
FEATURE OF AUTUMN, AMONGST TRIBEMEN OF ZHOB
DISTRICT. (BALUCHISTAN.)
BY**

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Scurvy (*Scorbutus*) is a deficiency disease caused by lack of Vitamin C (Ascorbic acid) in the diet. It is characterised by weakness, in the form of debility, lassitude, anaemia, sponginess and ulceration of gums, purpura, particularly around hair follicles on the lower limbs, subcutaneous or submucous haemorrhage, marked tender subperiosteal extravasations and failure of wounds (accidental or at operation) to heal.

In the middle ages, it was recognised that fruits and vegetables cured and also prevented scurvy, that dried fruits and vegetables had no effect and that among fruits the ORANGES and LEMONS had the maximum anti scorbutic contents. The production of scurvy in Guinea-Pigs by Holst and Frohlichin in 1907, gave the final proof that the disease is due to lack of Vitamin "C" Ascorbic acid. (Graham George).

Vitamin "C" deficiency, (scurvy) was rife in the days of sailing ships. It was stamped out in the Royal Navy by a compulsory daily ration of 1 oz of lemon juice. Bleeding gums and loosening of teeth were the leading features of stomatitis (Hamilton Bailey and Love). Hyperkeratosis of the hair follicles, first on the thighs and then on abdomen and calves, appear in the fifth month, while failure of the wound to heal in the sixth month of Vitamin "C" deficiency in the diet. Mans minimum requirement of Ascorbic acid, to prevent scurvy, is 1 oz of lemon juice or 20 mg, Ascorbic acid. A marked drop in ordinary excretion of Vitamin "C" is observed in time of influenza or feverish cold or other infective states. Daily normal intake of Vitamin "C" ranges from 25-50 mg. Vitamin "C" was isolated from lemon juice by Waugh and King.

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Fruits and vegetables vary considerably in anti-scorbutic value. Oranges, lemons, tomato, swede, cabbages and black-currents have high Vitamin "C" value, while grapes, beet-root and turnips have a low value. Cooking destroys Vitamin "C". Canned fruits and vegetables contain Vitamin C, as these are processed in the absence of air, while jams and marmalade processed by boiling in air, do not contain Vitamin "C". Milk is low in Vitamin "C" contents.

Scurvy is occasionally seen in children (6 month-1 year) put on pasteurised or dried milk and elderly people living on defective diet alone. It is also seen among adults on break diet.

Scurvy was noticed amongst infantry troops of ZHOB MILITIA, during British regime, when they used to march long distances in winter without proper transport facilities and living for days on dried country meat (Landhi) and dry loaf of bread, with—out vegetables, fruits and fresh milk (Fazal Haq 1966).

The Sub-scurvy state is common amongst the tribesmen of ZHOB DISTRICT, both in the winter and autumn seasons, as the result of diet containing very little Ascorbic acid and they are prone to excessive bleeding when wounded or operated upon. Every autumn, many cases of scurvy are admitted in Civil Hospital (Male and Female section) Fortsandaman, District Zhob.

CASE REPORTS

In March, 1967, during autumn, ten patients from of 25 to 70 Years of age, including 4 females showing moderate degree of scurvy, were admitted.

The patients with mild scurvy were not admitted and were treated as outdoor patients, in the District Head Quarter Hospital, Fortsandaman and other Dispensaries in Zhob District.

The tribesmen with sub-scurvy state did not report because of the lack of knowledge of the latent symptoms.

All these patients were from country-side living on "LANDHI" (dried meat, treated with salt and Asfoetida), dry loaf made of Maize/Wheat, cooked and

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boiled potatoes and Cereals, green tea with raw sugar (Gur) and dry onions, but no fresh milk. Vegetables or fresh fruits were not taken, due to lack of availability, during the late winter or autumn *i. e.* 4-5 months before admission. All of them had habit of chewing "NASWAR" *i. e.* treated tobacco. They belonged to poor agricultural tribes of "PATHANS", with poor economical conditions and lack of health education.

All of them had a good general physique and looked well built in appearance and presented the following symptoms.

1. Ill health, in the way of generalised weakness, lassitude, dizziness and aches in all cases.
2. Dyspepsia and constipation in 3/4th of the cases.
3. Low grade pyrexia in half of the cases.
4. Bleeding gums of blackish colour in all the cases.
5. Swollen and painful knees and ankles in 3/4th of the cases.
6. Muscular pain in calves and thigh, with overlying red, shiny and hot skin in two cases.

The main symptoms present were ill health, bleeding from black gums, and swollen and painful joints of lower limbs.

Gums :

These were swollen, spongy, and tender, black in colour and bled easily on examination.

Joints :

Knee and ankle joints were swollen and tender, with painful restricted movements. Two patients refused manipulation of the Joints.

Muscles and Skin :

Two patients had induration in calves and thighs with overlying red, and shiny skin, and tender and warm to touch.

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Anaemia :

There was definite pallor in all cases with moderate degree of anaemia or clinical examination.

INVESTIGATIONS**Urine :**

No abnormality except oxaluria in one and phosphate uria in others.

Stool :

No frank or occult blood.

Blood :

1. HB % ranged from 50 % to 70 %
2. Moderate Leucocytosis in 6 cases, while normal count in other cases.
3. Poikilocytosis and amisocytosis in three cases. No nucleated red cells.
4. Platelets count Normal.
5. Bleeding time Normal.
6. Co-agulation time Normal.
7. E. S. R. raised in all cases from 25 mm to 80 mm. (Westergren).

X-Ray Examination :

X-Ray of the Joints did not reveal any abnormality at the time of examination.

Bio-Chemistry :

Ascorbic acid in plasma, not done due to lack of laboratory facilities.

Note : The Ascorbic acid in plasma varies from 0.6 to 1.85 mg per 100 cc in health.

Standard Urinary Excretion Test : Not applied due to lack of laboratory facilities.

Method : Vitamin "C" is excreted in the urine as Ascorbic acid, and is estimated in acid solution by the reduction of 2,6 Dichlorophenolindophenol. The daily excretion varies from 15 to 30 mg. (10-50 mg Limits) on a diet with plenty of fruits and vegetables and from 5 to 11 mg (5 to 11 mg) on a diet with a little anti-scorbutic food.

The diagnosis can be established by the absence of Ascorbic acid in plasma, and finding that the standard excretion of 50 mg in the 24 hours period three hours

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after the test dose of 70 mg per Lb body weight, is not reached until the seventh or eight (8th day) and by this time, the patient will be well on his way to recovery.

Tourniquet Pressure Test :—Tourniquet pressure at 70 mg Hge for two minutes produced purpuric spots in 4 cases.

Treatment and Progress : All the patients were treated with 1000 Ascorbic acid daily, supplemented by haematinics in the form of iron and Liver and supportive therapy in the way of analgesics like aspirin, and salicylates. The diet consisted of orange juice, tomato juice, in addition to meat, vegetables, eggs, chapatis (wheat bread) milk and tea.

They all recovered in two weeks period, the stay in one case was three weeks, because of general malnutrition.

PATHALOGY

A Scurvy is a disease, in which pathological changes are as under :—

1. An increased permeability of the capillaries to the red cells, responsible for haemorrhage.
2. An interference with the normal growth of the erythrocytes causing anaemia. (Orthochromic or normo-chromic, but may be microcytic or macrocytic).
3. A change in the bones, the result of unorganised provisional bone, which occupies a wide area at the growing ends of the bones, which are very friable.
4. In scurvy and subscurvy state, collagen is not formed at the proper time of healing, with the result that scar is poorly united and may burst open easily and may even cause peritonitis after abdominal operation or even hernia.
5. The adrenal may not contain any Ascorbic acid in scurvy.
6. The plasma may not contain vitamin "C" in scurvy, the normal plasma Ascorbic acid variations being from 0.6 to 1.85 mg per 100 cc.

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DISCUSSION

10 patients of "SCURVY" due to Vitamin "C" deficiency were admitted in male and female section of Civil Hospital Fortsandaman in Zhob District, during the autumn months of the year 1966.

The number of cases with subscurvy state could not be estimated, but at least (one-fourth) $\frac{1}{4}$ of the population, on poor Vitamin "C" diet, had a tendency to bleed profusely on accident or on operation.

Most of the patients had passed the age of adult life, entering into middle age or were elderly persons. They belonged to lower income groups-Rs 200/—per capita, with poor economical conditions and lack of health education. Their diet consisted of "LANDHI" (dried meat treated with salt and Asfoetida), loaf of maize/wheat, dried onions and certain cereals. Intake of milk was almost nil. tea, with raw sugar (gur) and chewing "NASWAR" (containing treated Tobacco), were the part of their normal daily consumption of food habits. During winter and autumn season they had no fresh fruits or fresh vegetables. The food thus hardly contained any Vitamin "C". This is due to the lack of water, both due to scanty rain fall and fall of water level in "KAREZ" (Running streams underground) in the hilly tracts of Zhob District, during the autumn and winter seasons.

In summer and spring, fresh vegetables and fresh fruits and nuts, whether locally grown or fetched from the neighbouring Districts, are available in abundance.

The symptoms presented in most of the cases were general weakness, ill health, lassitude, dizziness on standing, bleeding gums of black colour, swelling and pain of the Joints and muscles of the lower limbs.

Anaemia, sponginess of bleeding gums, tenderness and swelling of knee and ankles joints and indurated swelling of the muscles of the lower limbs, were the main signs, indicating sub-periosteal haemorrhages and effusion into popliteal space and loose tissue around the malleoli. These signs were of moderate degree.

In these series, no subcutaneous haemorrhages or purpuric spots around hair follicles were seen, nor hyperkeratation of the hair follicles. No haematuria, epistaxis, melaena, pleural or peritoneal haemorrhages or sub-conjunctival haemorrhages, were observed in series of cases under discussion.

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Diagnosis was easy, as the disease arose in a number of cases simultaneously, with characteristic symptoms, although absence of Ascorbic acid in plasma and Vitamin "C" standard urinary excretion test, could not be carried out due to lack of laboratory facilities. The tourniquet pressure test, producing purpuric spots, pathognomonic of scurvy, was observed only in 4 cases.

The patients recovered on fresh fruits and vegetables including orange juice, and tomato juice supplemented by Vitamin "C" 1000 mg daily—with fresh milk and balanced diet containing meat and eggs. Haematinics were also given for anaemia.

The patients recovered in 2-3 weeks and discharged as cured. No pathological changes could be detected in the bones and Joints, on X-Ray, as these cases reported early and rapidly improved under treatment.

Differential diagnosis from acute osteomyelitis, leukaemia, thrombocytopenic purpuric, infective endocarditis and mercurial caexia or syphilitic rashes, offered no difficulty, on clinical grounds alone.

SUMMARY

An attempt has been made to trace the factors responsible for the cause of Vitamin "C"-Ascorbic acid deficiency in scurvy and sub-scurvy state amongst tribe men of Zhob District of Baluchistan. Poor economic conditions and lack of intake of fresh vegetables and fresh fruits, due to lack of rain water during winter and autumn, were the responsible factors.

10 patients admitted in Civil Hospital Fortsandaman in March-1966, with signs of moderate degree of "Scurvy" rapidly improved on treatment with Vitamin "C" 1000 mg daily with fresh fruits (tomato and orange) and fresh vegetables, supplemented with haematinics for treatment of anaemia.

The prognosis was good in all cases. Clinical observation is of importance, in far-fetched areas without laboratory facilities.

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Agricultural development in hilly areas with scanty rainfall and importance of health education may go a long way to remove the sub-scurvy state in Zhob District.

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THE RURAL HEALTH SCHEME IN WEST PAKISTAN

By

*Prof. A. H. Awan, M.D.**

Good health is essential to the well-being and happiness of all people and on it depends our national progress. In West Pakistan, 33.2 million persons reside in rural areas against 9.7 millions in urban areas, and agricultural pursuit is the main productive occupation of our people. Thus, our rural population constitutes the back-bone of our nation. In the words of Gen. Ayub," the rural areas constitute the main arteries for the supply of lifeblood which sustains the glory and glamour we see and enjoy in cities." Our food, our labour force and our internal and external defence are all dependent upon the good health of our peasants.

RURAL HEALTH CENTRES

Realizing the importance of looking after the health and happiness of the common man in our villages, top-priority was given by the Government to the establishment of rural health services through a well thought off and well planned rural health scheme, whose implementation commenced sin 1961. The scheme was designed to provide integrated medical aid and preventive medicine services to the rural population. The scheme envisage the establishment of a rural health centre for every 30,000 to 50,000 population unit. Each centre consists of a Primary Health Unit and three Secondary Health Units or Sub-Centres. The staff consists of a male doctor, a female physician, a lady health visitor, a clerk and a driver. Besides, at the primary centre, the additional staff consists of a health technician, a laboratory assistant, three dispensers/dressers, and other needed inferior staff. Additional staff at each of the sub-centre consists of a health technician, a midwife or a nurse dai or a well trained dai, and a sanitary patrol. Full list of the rural health centre staff, is given in the following table.

*Head of the Department of Public Health Practice, Institute of Hygiene and Preventive Medicine, Lahore.

TABLE I

Staff Employed at a Rural Health Centre

Item No.	Type of Staff	Number of Staff
1	Male Physician	1
2	Female Physician	1
3	Health Technician	4
4	Lady Health Visitor	1
5	Dispenser	1
6	Dressers	2
7	Laboratory Technician	1
8	Junior Clerk(Administration)	1
9	Driver	1
10	Fitter cum Mistry	1
11	Midwives (Dais)	4
12	Sanitary Patrols	4
13	Peons	4

The male doctor and female physician hold clinics at the primary centre and at each of the three sub-centres. They are provided with mechanical transport for undertaking their field duties. Ordinary ailments and preventive work is done at the spot. More complicated cases and serious cases are transferred to the primary centre from the sub-units. Cases requiring detailed laboratory investigation, or attention from medical specialists or surgeons, are sent to referral hospitals.

In the beginning 10 Demonstrations cum Training Centres were opened with the assistance of U.S., A.I.D. programme. With the experiences gained 71 new rural health centres were opened. The staff for these centres was specially trained at the Demonstration cum Training Centres and at the Institute of

Hygiene and Preventive Medicine, Lahore. Two additional primary health centres were organized in Dir State by the Home Department. Another centre was opened at Karachi. Thus in all 84 primary centres and 240 sub-centres have so far been opened to meet the health needs of rural areas. Annual expenditure on each of these rural health centres amounts to Rs.95, 000. Following table lists various Primary Health Centres along with the date they were opened :

TABLE II

Primary Health Centres in West Pakistan—Region and Division-wise, 1969

1 Name of Primary Health Centre	2 Date of opening
I. Peshawar Region :	
<i>Peshawar Division</i>	
1. Lora (District Hazara) ...	26th November, 1962.
2. Ghazi (District Hazara) ...	1st May, 1963.
3. Khanpur (District Hazara) ...	20th August, 1965.
4. Naryab (District Kohat) ...	19th October, 1962.
5. Lachi (District Kohat) ...	29th October, 1963.
6. Takhat Bai (District Mardan) ...	1st July, 1965.
7. Katlang (District Mardan) ...	15th April, 1965.
8. Deg Ismail Khel (District Peshawar) ...	1st June, 1966
9. Khairabad (District Peshawar) ...	7th May, 1961
<i>D. I. Khan Division</i>	
1. Tajori (District Bannu) ...	1st February, 1963.
2. Paroa (District D.I.Khan) ...	11th August, 1962.
3. Kiri Shamoza (District D.I.Khan) ...	8th March, 1965.

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4. Ama Khel (District D. I. Khan) ... 7th December, 1965.

II. LAHORE REGION

Rawalpindi Division

1. Lala Musa (District Gujrat) ... 3rd September 1962
2. Munday (District Jhelum) ... 17th September 1962.
3. Lilla (District Jhelum) ... 1st July, 1961.
4. Phagwari (District Rawalpindi) ... 10th October 1961.
5. Daultala (District Rawalpindi) ... 14th January, 1961
6. Qazian (District Rawalpindi) ... 8th October, 1962.
7. Lawa (District Campbellpur) ... 17th September, 1962.
8. Rangoo (District Campbellpur) ... 1st March 1963.
9. Chabb (District Campbellpur) ... 15th March, 1963.
10. Domel (District Campbellpu) ... 21st June, 1966.

Lahore Division

1. Warburton (District Sheikhpura) 23rd April, 1961.
2. Khanka Dogran (District Sheikhpura) ... 1st March, 1962.
3. Rahanwala (District Sheikhpura ... 16th June, 1963.
4. Lulliani (District Lahore) ... 23rd April, 1961.
5. Manga District (Lahore) ... 15th March, 1963.

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6. Sadhra (District Gujranwala) ...	14th April, 1962.
7. Kot Main (District Sialkot) ...	7th June, 1963.

III SARGODHA REGION

Sargodha Division

1. Qamar Mashani (District Mianwali)	4th October, 1962.
2. Jandanwala (District Mianwali) ...	21st July, 1963.
3. Behal (District Mianwali) ...	1st July, 1965.
4. Tabisar (District Mianwali) ...	23rd July, 1965.
5. Ranana (District Lyallpur) ...	1st March, 1962.
6. Chak Jhumra (District Lyallpur) ...	1st September, 1964.
7. Mochiwala (District Jhang) ...	1st April, 1962.
8. Shorkot R. S. (District Jhang) ...	11th September, 1963.
9. Farooqa (District Sargodha) ...	9th April, 1964.
10. Jauharabad (District Sargodha) ...	1st May, 1964.

Multan Division

1. Fazipur (District D. G. Khan) ...	1st March, 1962.
2. Mithan Kot (District D.G. Khan) ...	21st April, 1963.
3. Kacha Khuh (District Multan) ...	1st March, 1962.
4. Kassowal (District Sahiwal) ...	27, November 1962.
5. Shehr Sultan (District Muzaffargarh).	1st April, 1962.

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6. Jatoi (District Muzaffargarh)	23rd April 1963.
IV. KHAIRPUR REGION	
<i>Bahawalpur Division</i>	
1. Uch Sharif (District Bahawalpur) ...	20th November, 1960.
2. Chani Goth (District Bahawalpur)	19th March, 1962.
3. Khairpur Tamewali (District Bahawalpur) ...	1st July, 1965.
4. Mianwali Qureshian (District Rahim-yarkhan) ...	27th April, 1963.
5. Nawazabad (District Rahimyar khan) ...	1st March, 1966.
6. Mandi Sadiq Gunj (District Bahawalpur)	1st January, 1966.
<i>Khairpur Division</i>	
1. Kazi Ahmad (District Nawabshah)	10th October, 1961.
2. Kandiaro (District Nawabshah) ...	15th February, 1963.
3. Ratto Dero (District Larkana) ...	1st November, 1962.
4. Warah (District Larkana) ...	4th March, 1963.
5. Thari (District Khairpur) ...	15th February, 1963.
6. Pano Akil (District Sukkur) ...	1st March, 1962.
V. HYDERABAD REGION	
<i>Hyderabad Division</i>	
1. Tando Jam (District Hyderabad) ...	1st April, 1961.

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|---|-----------------------|
| 2. Bulri (District Hyderabad) ... | 1st January, 1963. |
| 3. Tando Ghulam Ali Khan (District Hyderabad) | 12th October, 1964. |
| 4. Golarchi (District Hyderabad) ... | 29th December, 1964. |
| 5. New Saidabad (District Hyderabad) ... | 5th December, 1964. |
| 6. Mirpur Sakro (District Thatta) ... | 25th July, 1964. |
| 7. Nabisar Road (District Tharparkar) | 9th June, 1965, |
| 8. Jhudo (District Tharparkar) ... | 17th September, 1964. |

9. Jhol (District Sanghar) ... 7th August, 1964,

10. Phulhadyon (District Sanghar) ... 25th June, 1965.

11. Shahpur Chakar (District Sanghar) ... 19th November, 1964.

12. Khairpur Nathanshah (District Dadu) ... 21st December, 1964.

Karachi Division

1. Bela (District Lasbela)

VI. QUETTA/KALAT REGION

Kalat Division

1. Khuzdar (District Kalat) ... 31st August, 1962.

2. Dhadar (District Kachhi) ... 30th July, 1963.

3. Wadh (District Kalat) ... 30th June, 1964.

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4. Awaran (District Mekran) ...	19th September, 1965.
5. Panjgoor (District Mekran) ...	31st March, 1964.
6. Ladghashet (District Kharan) ...	30th June, 1963.
<i>Quetta Division</i>	
1. Pishin (District Quetta) ...	30th January, 1960.
2. Gulistan (District Quetta) ...	30th June, 1965.
3. Kowas (District Sibi) ...	15th October, 1965.
4. Qila Saifullah (District Zhob) ...	25th June, 1965.

Note :—(A total of Rs. 2704 millions has so far been spent on Rural Health Centres).

DISTRICT AND TEHSIL HEADQUARTER HOSPITALS

The district and Tehsil Headquarter Hospitals, in the Rural Health Scheme, function as referral units. Patients who have diagnostic problems, or who need attention by various experts or who are seriously ill and need expert nursing services are transported from the Rural Health Centre to the nearest referral unit. Attention has been therefore paid to making available the needed institutions by opening new hospitals (wherever needed) and by expanding and enlarging the services of the hospitals already in existence.

Eight new modern District Headquarter Hospitals, each having 50 to 110 beds (total 634 beds) were planned and sanctioned. Three of these (Gujrat, Jhelum and Sanghar) have already been occupied and have started functioning. The construction work on Sialkot and Khairpur Hospitals has been already completed and construction work on Loralai hospital is now nearing completion and would be ready for operations during the current financial year. The construction work on hospitals at Bannu and Jhang has reached an advanced stage and these hospitals are likely to be completed before 1970-71.

Upgrading and expansion of 5 hospitals (at D.I. Khan, Rawalpindi, Bahawalnagar, Dadu and Turbat) has been recently completed. Two other hospitals

i.e. at Nawabsah and Rahimyarkhan, are in advance stage of expansion and will become fully operative during the current financial year. Expansion of 9 more is planned hospitals for the near future.

The programme has so far added 600 new beds in the various completed District Headquarter Hospitals during the last 8 years.

Previously various kinds of medical specialists were only available at large hospitals in big cities like Lahore, Karachi, Hyderabad, Quetta and Peshawar. Rural area hospitals did not have this facility and patients had to travel long distances, at great expenditure and inconvenience, to come to bigger cities for diagnosis and treatment. Specialist services in Medicine, Surgery, Obstetrics and Gynaecology, Anaesthesia and Clinical Pathology have been made available for eight district Headquarter Hospitals.

Previously dental health facilities were not available to our vast rural population, and people were mostly attended by quacks or had to travel long distances for coming to metropolitan cities like Lahore for dental care. Dental Clinics have now been opened in all district headquarter hospitals except those at Nushki, Kharan, Dhadar and Bela.

In the Rural Health Services Scheme, 22 new Tehsil Headquarter Hospitals were sanctioned. Of these ten such hospitals (at Kahuta, Kharian, Shakargarh, Digri, Sujwal, Uthal, Bagh, Isakhel, Kalabagh and Jauharabad) have been completed. The work on two other Tehsil Headquarter Hospitals (Gothki and Tando Mohd Khan) is nearing completion and will be completed during the current financial year. The work on 5 such hospitals (Shujabad, Kandhkot, Shahdadkot, Shahdadpur and Mehar) is in advanced stage of completion and would be finished during the next year. The work, on the remaining Tehsil Headquarter Hospitals (Rajanpur, Moro, Kambar, Mansehra, Karak and Pasrur) has commenced during the current year.

Seventeen Civil hospitals at Tehsil Headquarters were sanctioned for expansion and upgrading. Of these, work has been completed in seven hospitals (at Swabi, Wazirabad, Ahmadpur East, Minchiabad, Fort Abbas, Hasilpur and Dhadar) and the remaining hospitals are in different stages of development.

The development Plan in Tehsil Headquarter Hospitals has so far added 425 beds to those already existing.

An essential aspect of rural health scheme has been to improve district health administration and administration of district headquarter hospitals. Consequently 9 new offices of Medical Superintendents were created at Jhelum, Gujrat, Gujranwala, Sheikhupura, Sahiwal, Jhang, Bahawalnagar, Rahimyar Khan and Sanghar. Eighteen new offices of District Health Officers were also established. West Pakistan has now a District Health Officer in each of its Districts except Sanghar, where this offices is likely to be established during 1969-70.

Seventynine offices of Assistant District Health Officers have also been created for providing assistance to District Health Officers in their public health work in Rural Areas. This has considerably improved our administrative and supervisory services in our Rural Health Programme.

Total expenditure on Rural Health Scheme, conducted since 1961, amounts to Rs.62.3 million.

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HEALTH, LABOUR AND PRODUCTIVITY

By

Miss Sughra Ahmad, M.A (Statistics)

Productivity is a process which results in the creation of material as well as non-material goods for the satisfaction of the wants of a community where as the term "Labour" refers to any exertion of body or mind undergone with a view to produce goods and services, i.e. applicable to human exertion. The conception of labour in economics includes not only the physical exertion undergone by workers such as Carpenters, Farmers, and other factory workers but also mental exertion undergone by intellectuals such as Doctors, Teachers, Statesmen, Writers, etc. Labour is an active factor of productivity. In its absence productivity cannot take place.

2. Labour or in other words "human effort" has a direct relation with the health of community from physical, mental and social point of view. The behaviour of human beings in productivity depends on their physical, mental and social conditions.

3. Round about productivity in modern world carries alongwith it a good deal of productivity in stages. The labourers have to be very cautious on all these stages, e.g. in agricultural productivity a farmer should know before hand what to produce, what to grow on each field, what equipment to use, what farm practices to employ, what fertilizers to use and how much to use and finally what should be the size of operating unit. Having found the answers to all of the above questions the farm operator will have to determine the basic organization of his enterprise. An important part of the operation is the planning of the work. Alert and vigilant farmers manage to get all of their work done well in time while others are always behind,

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Most of the productivity in developed as well as under developed countries is carried on with the help of machinery. The machines coming into use call for a high order of mechanical skill and judgement. Ignorance and carelessness in their use may wreck the machines and cause serious injuries to the workers damaging their physical health.

5. Physical health plays an important role in the productivity process. Weak and sick persons are hardly expected to get themselves involved into the economic activities. In the first instance physically and mentally handicapped Labour carries no weight, and if at all, under certain circumstances it is employed, it will have low returns and hence low paid. Modern factory consists of various small parts to the operation of productivity requiring a special type of skill. Some will require muscular strength mostly, others good eye sight, others judgement or some particular combination of any two or more of them.

6. Poor and unhealthy communities bring a tremendous loss to their economy. Obviously sick workers cannot achieve as much as the workers who are fit. Disease is a menace to the economy as the sick worker not only ceases to produce but continues to consume. No man can work well without adequate food. A poor diet lowers the worker's resistance power. They lack alertness, and intelligence. In an industrial project, where a commodity is to be produced, and manufactured knows that all the articles are not alike in regard to their quality characteristics. These dissimilarities are affected by "chance causes" and "assignable causes". An alert and intelligent labourer will at once find out the assignable causes and stop the productivity of the commodity at that point. On the other hand a mentally handicapped labourer is unable to find out any cause of dissimilarity and will carry out the productivity with the result that the things produced are not acceptable in the market thus bringing a loss to the economy. Debility and poor nutrition are placing an immense economic burden on all the developing countries. Debility and poor nutrition relate to poverty and the only way to reduce them is by economic

development. Economic development means better health, more and better food, better education and greater agricultural productivity.

7. Pakistan is predominantly an agricultural country, but still agriculture is in its preliminary stages. Eighty per cent of the population is illiterate. Primitive tools and implements are used by the labour force to harness the natural resources. Modern fertilizers and other machinery is hardly used for agricultural purposes and where in some parts of the country, the agriculturists are provided with machine tools implements, fertilizers and other varieties of seeds, etc. They are faced with the problem of designing their experiment, because they lack knowledge. Designing of an experiment means to plan before hand, what to produce, what plot of land to use for a specific agricultural product, what fertilizer to use to increase the output of a particular product. All this information is to be achieved if the agriculturists are well acquainted with their subject matter. It will depend on their better education.

8. A poor country cannot provide wide spread educational facilities. The agriculturists will, therefore, remain ignorant of the modern techniques so badly needed to boost the agricultural output. The economy of the country thus remains poor and social welfare activities can hardly be expanded.

9. In socially handicapped countries the labour is not well remunerated with the result that all the available labour force will lose interest thus damaging the economy to a considerable extent. Under employment and un-employment affect the health of the community tremendously and finally its economy. Ill health is in fact directly related to poverty. Obviously a poor community cannot flourish its economy. Diseases and frequent deaths take a heavy toll of labour force of a community. A poor country cannot provide sufficient medical facilities, educational facilities, etc. to its people.

10. Lack of medical facilities will result in persistence of disease and ill health which will bring in a poor economy. A poor country does not have sufficient finances to support the comparatively expensive preventive and rehabilitation

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services with the result that preventable, communicable and infectious disease will persist resulting in wide spread pestilence. These diseases will not only be a continuous source of economic drain but will also keep a large population out of active labour force. The disease not only results in loss of man working days but the ill health which results from it reduces the economic activity of the individual with the result that extra labour is needed to cope with the work. This in turn increases the cost of productivity thus further burdening the economy of the country.

11. Poor economy results in bad housing conditions and insanitary environments thus encouraging spread of disease and persistence of chronic ailments. This can lead to circumstances causing family break ups, thus further straining the economy not only of a family but of the community as a whole.

12. Healthy workers are efficient. They will bring about successive increase in the national income of the economy which in turn will provide all the facilities for a rapid growth and improved productivity of goods and services to satisfy the wants and demands of the community thus raising the way and standard of their living in all respects.

13. In the light of the above, one can undoubtedly say that Health, Labour and Productivity have a direct relationship with each other.

"THE ROLE OF A SANITARY ENGINEER IN INDUSTRIES"

By

Professor Mohammad Abdur Rahman Mallk.

1. Since the inception of the universe, industry has been a part of every civilization. This branch of life has developed to such an extent that the standard of civilisation in a country is judged by the industrialisation of that country. Now, many industrial establishments employ such a large number of people, that it becomes a community. And that community faces the problem of industrial sanitation in which are the principles involved in controlling the spread of infection or health hazards of the employee that are not inherent in the manufacturing process. For example, the industrial establishment that provides feeding facilities invites the danger of food borne infections. There, the sanitary precautions in food handling are urgently required.

2. In general, the various fields of environmental sanitation in industries could be:--

- (i) Availability of adequate portable water (supply).
- (ii) Disposal of industrial wastes.
- (iii) Air pollution control.
- (iv) Food Hygiene.
- (v) Provision of adequate sanitary facilities.
- (vi) General cleanliness of the industrial establishment.

The Sanitary Engineer or Public Health Engineer renders his services in the control of Environmental Sanitation, in a community where the industries are a part of. These industries could be categorised into HUMAN FOOD PRODUCING and other industries. Those dealing with Human Food Production require the stringent control of Environmental Sanitation to protect them from contamination. A little carelessness in this could result into death warrants of many people. Here, the Sanitary Engineer has an important role in advising and helping to practice all the precautions of food hygiene. These precautions will include the sanitary conditions in the plant itself as well as for the employees working in that industry.

*Talk delivered on world Health Day Celebrated on the 7th April 1969.

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4. All other industries such as Tanneries, cement, iron, steel and textiles etc, etc, have also felt, realised and are using the services of Sanitary Engineers in controlling the Environmental Sanitation. Lately two very distinct factors namely industrial-wastes disposal and Air Pollution Control have been added in the responsibilities of the Sanitary Engineer. The recognition by the industry of the great need to conserve the nation's water resources through effective control, treatment of industrial wastes, Air Pollution Control, the desire to provide the employees with safe water and safe food, the control of communicable diseases through healthy, clean and protective environments can ultimately prove a boon in the raising of production of the industry itself.

5. Generally, it is assumed that in industry the role of sanitary engineer is only to look after the availability of safe drinking water and disposal of industrial wastes. But now it has been proved that his engineering and public health skills are indeed more widely applicable in Food Sanitation, plant maintenance, rodent and insect control, Air Pollution Control, and ventilation etc. Although the Sanitary Engineer may not be directly associated with the occupational health, yet the role filled by him is directed towards, the same end.

6. As the industries are of heavy, medium and small size, therefore it is just possible that small size industries may not be in a position to employ a full time sanitary engineer. In that case, few small industries jointly can avail the services of the sanitary engineer. Then, the time is fast approaching the stage when the services of Sanitary Engineers will be available as CONSULTANTS.

7. In the end, it may be said, that the role of the Sanitary Engineer in controlling the Environmental Sanitation in all the industries is not only desired but is absolutely required.

**PILOT PROJECT FOR INTEGRATION OF M.C.H. AND FAMILY
PLANNING SERVICES : FIRST QUARTERLY REPORT
FROM 1ST APRIL TO 30TH JUNE, 1969.**

By

Dr. A.H. Awan, M.D.

I. INTRODUCTION :

West Pakistan Maternity and Child Welfare Association is a provincial branch of Maternity and Child Welfare Association of Pakistan. MCWAP is affiliated with International Union of Health Education, Paris, and with International Union of Family Organizations, Paris. The Provincial Association has its headquarters at Lahore. It has 23 District affiliate MCWA's, who are at present financing 17 MCH Centres. MCWA propagates the concept of "Comprehensive MCH Care" which includes not only traditional antenatal, post-natal, infant and pre-school service but also pre-marriage guidance, pre-pregnancy guidance, family planning, immunization, family inter-relationship, home economics, home sanitation and nutrition education etc. The Association advocates the policy that health and welfare are the responsibilities of a Welfare State but assistance is needed from voluntary health organizations for the following purposes :-

1. Demonstration of a technical programme or its more efficient conduction or its more economic management.
2. Organization of pilot-projects for meeting felt needs of the community.
3. Research in operational or basic areas.
4. Mobilizing public opinion in favour of technical services for meeting unmet needs, resulting in pressure on political groups.
5. Supplementing official efforts for providing health and welfare services. These projects are of a temporary nature and whenever government or any other public agency is prepared to take over responsibility, such services are handed over on the condition that they shall be maintained at least at the present level.

The Association believes in depending, by and large on its own resources collects its funds through the sale of Mother and Child seals

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during a fortnight, once every year. Association offers educational and clinical services. It believes in developing a paid hierarchy for operational work, while voluntary leaders are mostly meant for policy making, policy supervision and budget cum fiscal control.

Since its very inception, West Pakistan MCMA, has propagated that family planning was an essential service for the family and that it constituted an integral part of MCH programme. We have believed that MCH services provide natural platform from which family planning services should be offered to families in general and mothers in particular. Mothers are the special risk group who need family planning advice, and these constitute the clientele of the MCH Centres. MCH Centres are therefore in the best position to motivate mothers, specially at most strategic and vulnerable periods of their life, and to render and supervise planned parenthood services.

West Pakistan MCWA decided to launch a pilot operational project for emphasizing family planning component of the programme of MCH Centres. It was also intended to assess the extent to which family planning objective can be achieved through MCH services of varying depths.

II. THE PROJECT

This pilot project for demonstrating the value of integrated Maternal and Child Health and Family Planning services has been started with effect from 1st April, 1969, and is being managed and financed by the West Pakistan Maternity and Child Welfare Association out of Rs. 80,000/—allocated from its own funds and additional Rs. 30,000/—grant allocated by the West Pakistan Family planning Association. The project has been sanctioned for a period of one year, for the present. The basic philosophy on which this project is based is the hypothesis that more effective and lasting family planning impact can be produced through an efficient, well-supervised ongoing MCH programme, and that such an objective is feasible without harming existing MCH services.

The project has been started in 8 MCH Centres in West Pakistan and has three sub-projects :

- (a) Riaz Ali Shah Community Health Centre, where intensive supervision and professional leadership from a MCH Physician has been provided. The centre is adequately staffed and has one MCH Physician for 3 full days a week (as the administrator of the project and as medical

consultant), two lady health visitors, one trained dai and one peon. The centre is routinely supervised by a health visiting supervisor and by the Chairman of the "Experts Committee for the Management of the Project", who personally directs and controls the sub-project.

- (b) Two Community Health Centres at Kasur, and one Community Health Centre at Dil Mohd Road, Lahore, under the management of Lahore District MCWA. Each of these centres have one lady health visitor, one trained Dai and One Peon. Lady Health Visitors are administratively responsible for the routine management of Centre. One MCH Physician (officer being a regular whole time employee of the Association) is available as a medical consultant and for over-all direction, and spends each week, one full day at each centre, holding one three hours clinic during forenoon and one 3 hours clinic during forenoon. Health Visitor Supervisor inspects health visiting functions in each centre once a month. She checks 5 to 10 per cent of family folder cards (including family planning cards) by paying home visits. Further she also demonstrates, by working with the field team, adequate public health nursing practices.

Thus the MCH Services in these centres are partially supervised and have partial direction from a regular service physician.

- (c) Community Health Centres at Sialkot, Jhelum, Lyallpur and Sargodha, which are managed by the respective District MCWA's and are under the technical and administrative management of respective Lady Health Visitor. The staff includes one lady health visitor, one trained dai and one peon. Besides one private practitioner holds two weekly clinics, each lasting two to three hours. Each of these doctors are paid an honorarium of Rs. 100 per month. Her first weekly clinic is for antenatal care and family planning and her second clinic is for post-natal care, family planning and paediatric care. The Provincial Health Visiting Supervisor inspects these Centres once every month. Thus active direction and control of MCH Physician is totally lacking in these centres.

Each of the above 8 community health centres offers MCH services to a fixed population of about 10,000 persons. These services are "comprehensive" and include health education and clinical assistance.

In each area, on an average, about 2000 families reside. On the basis of our experiences gained during "Saddar Pregnancy Study" we estimate that there

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would be about 2000 ever-married women in each centre area, out of which one fourth *i.e.* 500 would be non-productive. The remaining 1500 women are in the productive age period. Estimated birth rate being 50 per thousand population, we expect 500 new pregnant cases in each centre area each year. In other words $\frac{1}{3}$ rd of total productive-age married women population bears a child every year.

Present goal of our official National Family Planning Programme is to reduce birth rate from 50 to 40 per 1000, in 5 years time, at a cost of Rs.1/- per person per year (*i.e.* 5 rupees for the attainment of the 5 year objective). This amounts to 20 per cent reduction in birth rate. In our centre areas, if 20% *i.e.* 300 of women in the productive-age period observe family planning successfully throughout the course of one year this objective would be achieved. Since contraception is some times done ineffectively or irregularly and there are chances of failures, our programme objective is to see that 30 per cent of productive women are placed under family planning coverage (*i.e.* 450 women out of 1500 estimated productive women in the area).

It has therefore been planned to educate women through house to house survey contacts and through contacts during centre visits to observe family spacing or family limitation through the use of contraception, with the objective of covering 450 productive-age women. When this target number is reached house to house surveys will be stopped and new clients motivated only through centre contacts. In case of contraception failure or if family planning is given up by a client, the case would be substituted by motivating and registering a fresh case. Once this target number is reached, follow up contacts will be made at least once in three months. The project is expected to achieve its programme objective in one year. However each of the 450 clients will need to be followed for full one year from the date of commencement of contraception before functional objective (*i.e.* reduction in birth rate by 20%) can be expected to have been reached. Even if we achieve the desired lowering of birth rate in two years of project time, total cost at the rate of Rs. 1.4 per person per year would amount to Rs.2.8 for the total two years period. The National Programme intends so do so at a cost of Rs.5/- after a five year period. We will thus not only spend less money but will also attain our goals in less time. Further we would be offering comprehensive MCH care thus producing a firm base not only for our health services but also for population control. Our programme is thus likely to be far more economical and would be specifically directed on the target population. As a matter of policy all women will be motivated for spacing. Intensive motivational efforts will be made during antenatal and post-natal period. Women with 3 or more live children will be encouraged to have family limitation preferably through permanent methods.

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Since there are three varieties of sub-projects, we will also be able to assess the type of set-up most efficient, economical and productive. First evaluation would be done after 6 months. It is expected that sub-projects B and C will not fully attain specified objectives. The degree of deficiency will be noted and related with average costs. It will be determined if higher average costs on sub-project A are justifiable. However if any of the sub-projects B and C gives equally good results, then that model will be utilized for extension programmes in other areas in West Pakistan. Costs will then slightly decrease. Association however feels that probably first situation is more likely to prevail.

The project at present covers only 80,000 population and our total programme target is 3600 productive-age women under contraception coverage at the end of one year. However since this population is at present not under uniform type of MCH coverage, varying degree of success is expected in various areas.

III. ORGANIZATIONAL STRUCTURE:

West Pakistan MCWA has constituted a 14 members Experts Committee for planning, directing and managing the project. The Committee meets once a month. Its present membership is as follows:—

1. Dr. (Mrs). A.K.Awan, M.P.H., Professor and Head of the Department of MCH, Institute of Hygiene & Preventive Medicine, Lahore—(Chairman and Director of the Project)
2. Dr. Nassema Ismail M.B.B.S. Director MCH Services, W.P.M.C.W.A.—Secretary.
3. Dr. Gulshan H. Mirza, Secretary General M C.W.A. Jhelum.
4. Dr. Ismail Siraj-ud-Din Ph. D. Director WEPREC, Lahore.
5. Dr. A. G. Holliday M.D. Public Health and Family Planning Consultant, US-AID, Lahore.
5. Dr. Bilquis Fatima, M.R.C.O.G., Professor and Head of the Department of Obstetrics and Gynaecology, F.J. Medical College, Lahore.
7. Mr. A. Zablotsky, UNICEF Chief for West Pakistan.
8. Brigadier Ghulam Ahmad M.R.C.P., Associate Director West Pakistan Medical Research Council, Centre Lahore.

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9. Dr. A.H.Awan, M.P.H., M.D., Professor and Head of the Department of Public Health Practice, Institute of Hygiene & Preventive Medicine, Lahore.
10. Dr. Safia I. Ameen M.P.H. WEPREC, Lahore.
11. Dr. Surrya Hashmi M.P.H. Director Research and Evaluation Centre, Lahore.
12. Professor M. Fayyaz, Head of the Department of Sociology, Panjab University, Lahore.
13. Dr. Naseer Mahmud, M.R.C.P. Medical Specialist, W. P. Railway, Cairons Hospital, Lahore.
14. Dr. Aman Ullah Khan, M.B.B.S. D.P.H., M.P.H., Medical Director and Joint Secretary West Pakistan Family Planning Board, Lahore.

The Experts Committee meets once every month usually on the 7th day, and is responsible for planning, supervising and over-all direction of the project.

West Pakistan MCWA has created a special section for Integration of MCH and Family Planning services. The Chairman of the Experts Committee honorarily acts as the Director of the Project. She is assisted by one MCH Physician (Director MCH Services), one Health Visiting Supervisor (Director Public Health Nursing Services), one Health Educator and one Community Organizer. The Secretariat at Lahore is responsible for planning, direction, supervision, personnel training, guidance of district MCWA's, recording, tabulating and analysis of data, and for report writing.

The two Centres in Kasur and one in Lahore are under the over all direction of MCH Physician (Associate Director MCH Services). The Centres in Sialkot, Jhelum, Lyallpur and Sargodha are under the direction of the respective Secretary General of the District MCWA's.

ORGANIZATIONAL STRUCTURE

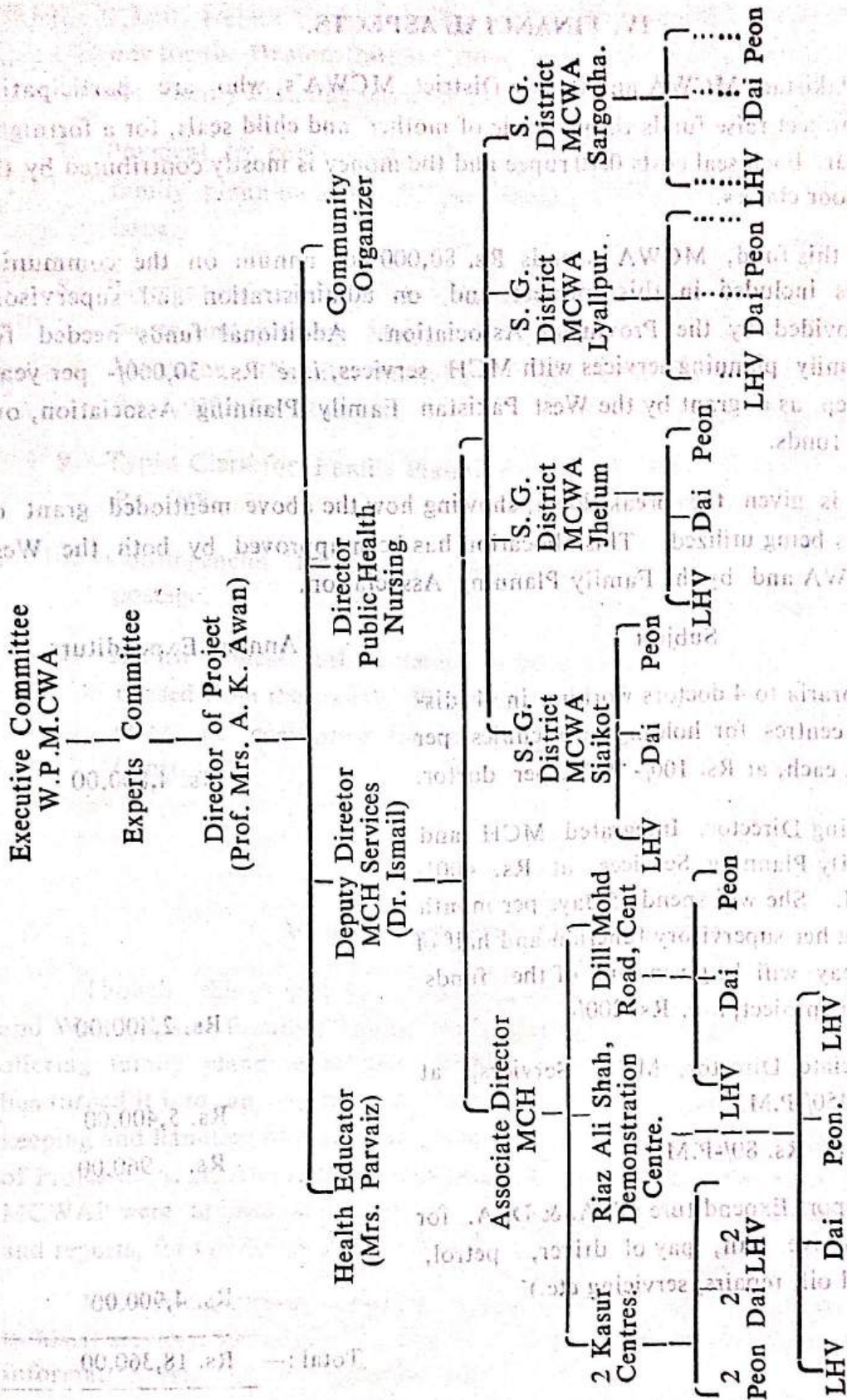


Fig. I, Organizational Chart of Integrated MCH and Family Planning Services Pilot Project

IV. FINANCIAL ASPECTS.

West Pakistan MCWA and its five District MCWA's, who are participating in this pilot project raise funds through sale of mother and child seals, for a fortnight, once every year. Each seal costs 0.10 rupee and the money is mostly contributed by the middle and poor classes.

Out of this fund, MCWA spends Rs. 80,000 per annum on the community health centres included in this project and on administration and supervisory machinery provided by the Provincial Association. Additional funds needed for integrating family planning services with MCH services, i. e. Rs. 30,000/- per year, have been given as a grant by the West Pakistan Family Planning Association, out of U. S.-AID funds.

Below is given the break-down, showing how the above mentioned grant of Rs. 30,000/- is being utilized. This allocation has been approved by both the West Pakistan MCWA and by the Family Planning Association.

Subject	Annual Expenditure.
1. Honoraria to 4 doctors working in 4 district centres for holding two clinics per week each, at Rs. 100/- P. M. per doctor.	Rs. 4,800.00
2. Nursing Director, Integrated MCH and Family Planning Services, at Rs. 400/- P. M. She will spend 15 days per month doing her supervisory function and half of her pay will be given out of the funds of this project, i. e. Rs. 200/-	Rs. 2,400.00
3. Associate Director, MCH Services, at Rs. 450/-P.M.	Rs. 5,400.00
4. Peon at Rs. 80/-P.M.	Rs. 960.00
5. Transport Expenditure (T. A. & D. A. for the above staff, pay of driver, petrol, mobil oil, repairs, servicing etc.)	Rs. 4,900.00
Total :—	Rs. 18,360.00

6. 2 Lady Health Visitors at Rs. 190/-P. M. one for the Demonstration Centre and one for Family Planning work exclusively. Rs. 4,580.00
7. Payment to contributors of articles on family planning at Rs. 50/ per article per issue. Rs. 600.00
8. Payment for meeting extra expenditure of paper and printing Mother and Child Magazine (Family Planning articles) Rs. 1,000/- for 12 issues. Rs. 1,000.00
9. Typist Clerk for Family Planning work at Rs. 150/-. Rs. 1,800.00
10. Contingencies for paper, printing and postage. Rs. 680.00
11. Health Educational Material to be purchased from the Family Planning Association at cost price for use in MCH Centres. Rs. 3,000.00

Total :— Rs. 30,000.00

V. RECORDS FOR THE PROJECT:

Though this project was originally sponsored by the West Pakistan MCWA and West Pakistan Family Planning Association as a service enterprise directed towards offering family planning services within the MCH set-up, the Experts Committee has turned it into an operational research project. Consequently adequate record keeping and handling of data was given considerable attention. Honorary services of Professor A. H. Awan, M. D. and Miss Zubaida Khan, Research Officer of the MCWAP were utilized and they were made responsible for devising record forms and reports, for tabulation and interpretation of statistics, and for writing reports.

MCWA has already devised its family folder for recording information relevant to MCH services. In addition following family planning card was devised for recording information relevant to family planning.

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FAMILY PLANNING SERVICE CARD

1. Family Folder No .
2. Individual No .
3. Name of client
4. Age yrs.
5. Name of husband
6. Age yrs.
7. Date when married
8. No . of children born
9. No . of boys alive.
10. No . of girls alive.
11. Date of birth of last two pregnancies and status of outcome.
 - (a) (i) Date (ii) Male/female (iii) Alive/dead born
 - (b) (i) Date (ii) Male/female (iii) Alive/dead born
12. Date of beginning of last menstrual period.
13. Reasons for soliciting contraception on temporary/permanent basis :—
 - (i) Ill-health
 - (ii) Socio-economic
 - (iii) Spacing desired
 - (iv) Already enough children
 - (v) Any other (specify)
14. Parent's educational status :—

Type of parent	No formal schooling	Below middle	Below Matric	Matric	Post-matric
Client					
Husband					
Client's father					
Client's mother					
Husband's father					
Husband's mother					

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15. Caste :—

	Wife	Husband
Caste		

16. Occupational category ;—

Husband's present occupation.	Husband's father's last occupation	Client's father's occupation at the time of client's marriage.

17. Economic status category (rupees per month) :—

	Rs. 0-99	Rs. 100-199	Rs. 200-299	Rs. 300 and more.
Client's family income per month.				
Client's father's family income/month at client's marriage.				
Husband's father's family income at client's marriage.				

18. Method prescribed (with date of commencement) :-

- | | |
|----------------|---------------------|
| 1. I. U. D. | 7. Diaphragm |
| 2. Oral | 8. Safe period |
| 3. Injection. | 9. Jelly |
| 4. Condom | 10. Other (specify) |
| 5. Foam tablet | |
| 6. Durafoam. | |

19. Reason I. U. D. not inserted :-

- | | |
|------------------------|------------------------|
| 1. Menstrual | 5. Tumour |
| 2. Pregnancy suspected | 6. Client's choice |
| 3. Pelvic infection | 7. Difficult insertion |
| 4. Erosion. | 8. Other (Specify). |

20. (a) Name of attending clinic

(b) Professional status.

(c) Qualifications.

21. Follow up.

22. Any other significant information :-

A monthly report form (as given below) was devised :-

MCWAP : INTEGRATED MCH & F. P. PROJECT.

MONTHLY RETURN FORM :

- No. of women contacted.
- No. agreed contraception.
- Type of methods used :

- | | |
|------------------|--|
| (a) I. U. D. | |
| (b) Oral tablet. | |
| (c) Injection. | |
| (d) Diaphragm | |
| (e) Condom | |
| (f) Foam tablet | |

(g) Durafoam..

(h) Jelly

(i) Any others (specify)

(a)

(b)

(c)

(d)

Signed

Secretary General MCWA

District-----:

VI. PERFORMANCE DURING FIRST THREE MONTHS (1ST APRIL TO 30TH JUNE, 1969).

Table No. I gives the number of women who were health educated for family planning through house to house survey technique, and through contacts at the centre. This table also gives the number of mothers who were given contraceptives during each of the three months. Table No I (d) gives the totals for the three months (1st April to 30th June, 1969).

No.	Name of Centre	No. of women health educated	No. of mothers given contraceptives	April 1969			May 1969			June 1969			Total
				House to house	At centre	Through contacts	House to house	At centre	Through contacts	House to house	At centre	Through contacts	
1.	Lahore Centre	100	100	10	10	10	10	10	10	10	10	10	100
2.	Rawalpindi Centre	200	200	20	20	20	20	20	20	20	20	20	200
3.	Islamabad Centre	300	300	30	30	30	30	30	30	30	30	30	300
4.	Shahdol Centre	150	150	15	15	15	15	15	15	15	15	15	150
5.	Other Centres	100	100	10	10	10	10	10	10	10	10	10	100
Total:		1000	1000	100	100	100	100	100	100	100	100	100	1000

TABLE I

Mothers Observing Contraception According to the Type of the
Contraceptive in Use (1st April to 30th June 1969)

(a) For April 1969

No.	Name of Centre	Mothers contacted & Health educated	No. Mother given cantraceptives							Total
			IUD	Inj Depot- Prov.	Oral Tab	Con- dom	Durafoam	Foam tab	EM KO	
1.	Ichara Centre, Lahore. ...	400	5	—	—	9	—	8	—	22
2.	D.M.R. Centre, Lahore. ...	350	3	—	—	4	—	2	—	9
3.	S.R. Centre, Kasur ...	300	—	—	9	6	1	4	—	20
4.	K.G.M. Centre, Kasur ...	200	—	—	—	4	—	4	—	8
5.	C.H. Centre, Jhelum ...	242	—	—	—	—	—	—	—	10
6.	C.H. Centre, Bialkot ...	150	—	—	—	—	—	—	—	4
7.	C.H. Centre, Bargodha ...	400	4	—	—	—	—	—	—	0
8.	C.H. Centre, ... Lyallpur ...	350	—	—	—	4	—	6	—	0
Total :		2393	12	—	9	27	1	24	—	74

(b) For May, 1969

1.	Ichra Centre, Lahore ...	493	9	12	10	7	3	—	—	41
2.	D.M.R. Centre, Lahore ...	246	7	—	—	—	—	—	—	7

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No.	Name of Centre	Mothers contacted & Healthn educated	No. Mothers given contraceptive							Total
			IUD	Inj. Depot. Provera.	Oral Tab.	Con-dom	Durafoam	Foam tab.	EM KO	
3.	S.R. Centre, Kasur. ...	922	6	—	3	11	1	9	—	30
4.	K.G.M. Centre, Kasur ...	352	6	—	—	5	1	5	—	17
5.	C.H. Centre, Jhelum ...	185	—	—	—	5	—	—	—	5
6.	C.H. Centre, Slakot ...	173	6	—	—	—	—	—	—	—
7.	C.H. Centre, Sargodha ...	923	3	—	—	4	—	—	—	—
8.	C.H. Centre, Lyallpur ...	322	—	—	4	—	—	4	—	—

(c) For June, 1969

No.	Name of Centre	Mothers educated	No. Mothers given contraceptives							Total
			IUD.	Inj. Depot. Provera.	Oral Tab.	Con-dom	Durafoam	Foam Nab	EM OK	
1.	Iehra Centre, Lahore ...	270	6	4	12	1	1	—	—	24
2.	D.M.R. Centre, Lahore ...	300	3	—	2	2	1	—	—	10
3.	S.R. Centre, Kasur ...	350	9	—	2	6	—	6	—	23

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No.	Name of centre	Mothers educated	No. Mothers given contraceptive							Total
			IUD	Inj. Depot-Provera.	Oral Tab.	Con-dom	Duraform	Faam tab.	KO	
4.	K.G.M. Centre, Kasur ...	150	—	—	—	12	1	12	—	25
5.	C.H. Centre, Jhelum ...	105	—	—	7	8	—	4	—	19
6.	C.H. Centre, Sialkot ...	150	7	—	—	4	5	1	—	19
7.	C.H. Centre, Sargodha ...	133	1	—	—	1	—	—	—	2
8.	C.H. Centre, Lyallpur ...	557	5	—	—	9	—	6	—	20
Total		2015	31	4	23	43	8	27	4	141

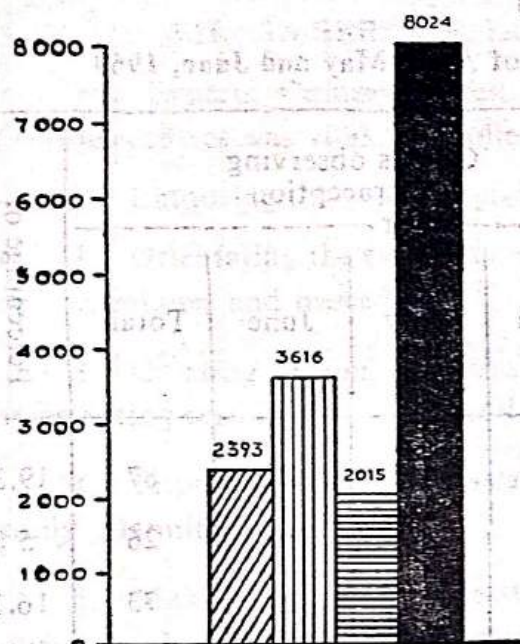
d. Consolidated performance during 3 months

1.	Ichra Centre, Lahore ...	1163	20	16	22	17	4	8	—	87
2.	D.M.R. Centre, Lahore ...	896	13	—	2	6	1	2	1	25
3.	S.R. Centre, Kasur ...	1572	15	—	14	23	3	19	—	73
4.	K.G.M. Centre, Kasur ...	702	6	—	—	21	1	23	—	50
5.	C.H. Centre, Jhelum ...	533	—	—	7	13	—	4	—	37
6.	C.H. Centre, Sialkot ...	473	13	—	—	4	5	1	2	31
7.	C.H. Centre, Sargodha ...	1456	8	—	—	5	—	—	3	25
8.	C.H. Centre, Lyallpur ...	1229	5	—	4	13	—	16	—	7
Total		8024	80	16	49	102	14	71	4	336

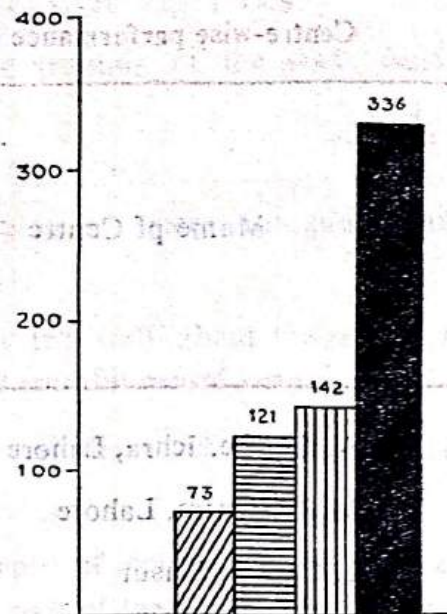
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FOLLOWING BAR DIAGRAM SHOWS TOTAL MONTHLY PERFORMANCE, AND COMPARES THE TOTAL USE OF VARIOUS CONTRACEPTIVES DURING THE 3 MONTHS PERIOD UNDER REPORT.

MOTHERS CONTACTED

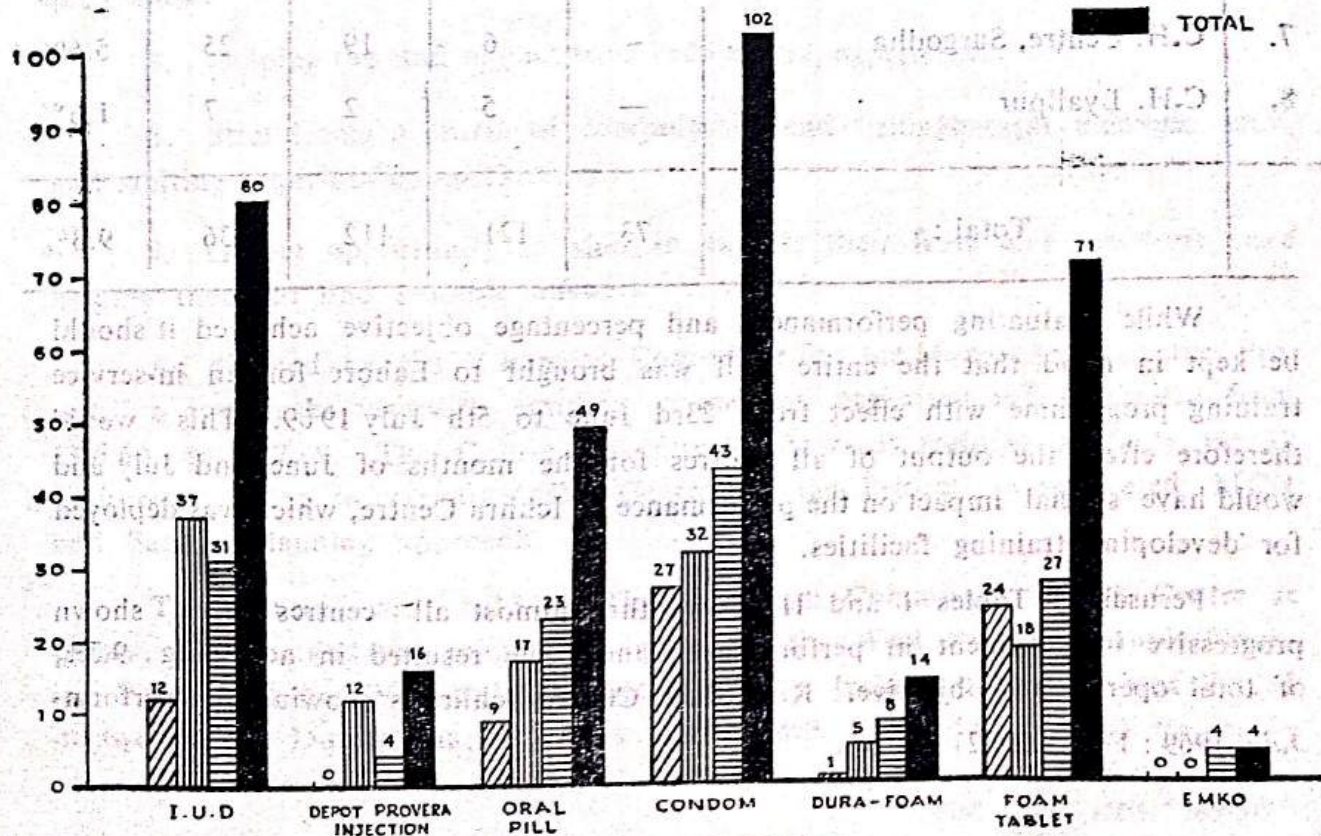


MOTHERS GIVEN CONTRACEPTION



B. TYPE OF CONTRACEPTIVES USED

APRIL
MAY
JUNE
TOTAL



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Table II compares the centre-wise performance of various centres during each of the last 3 months, and shows the percentage of total target achieved by each unit at the end of this period.

TABLE II

Centre-wise performance during months of April, May and June, 1969

No.	Name of Centre	Clients observing contraception				Percentage of target achieved
		April	May	June	Total	
1.	R.A. Centre, Ichhra, Lahore ...	20	41	24	87	19.3%
2.	D.M.R. Centre, Lahore ...	9	7	10	26	5.8%
3.	S.R. Centre, Kasur ...	20	30	23	73	16.2%
4.	K.G.M. Centre, Kasur ...	8	17	25	50	11.6%
5.	C.H. Centre, Jhelum ...	110	8	19	37	8.2%
6.	C.H. Centre, Sialkot ...	6	7	20	31	6.0%
7.	C.H. Centre, Sargodha ...	—	6	19	25	5.6%
8.	C.H. Lyallpur ...	—	5	2	7	1.6%
Total :		73	121	112	336	9.3%

While evaluating performances and percentage objective achieved it should be kept in mind that the entire staff was brought to Lahore for an in-service training programme with effect from 23rd June to 5th July 1969. This would therefore effect the output of all centres for the months of June and July and would have special impact on the performance of Ichhra Centre, which was deployed for developing training facilities.

Perusal of Tables I and II shows that almost all centres have shown progressive improvement in performance, and have resulted in achieving 9.3% of total operational objective. R.A Shah Centre Ichhra is showing best performance.

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ance, as was expected, because this centre enjoys better leadership, staffing and supervision facilities.

VII. IN-SERVICE TRAINING OF HEALTH VISITORS

The Experts Committee felt that in-service training of the staff working in various centres was vital for following purposes :

1. Enthusing the staff for giving efficient performance.
2. Orientating the staff with the objectives, plan of operations and standardized techniques and procedures.
3. Creating better understanding amongst the staff about the reasons for implementing certain procedures and for correct and truthful record keeping.
4. Improving the technical knowledge of the staff about MCH and Family Planning.
5. Making the staff understand the concepts of comprehensive MCH care and family planning being an essential and integral part of the MCH care.
6. Making the staff conscious about their responsibility to community and family health, and what they would achieve by full implementation of the programme.
7. Helping the staff to gain from each others, experiences.
8. Stimulating a spirit of comradeship and belongingness amongst staff, and exciting a spirit of competition.
9. Giving opportunity to staff to express their fears and problems and helping them to find suitable answers.

As directed by the "Experts Committee for the Management of the Project," a two-weeks inservice training course was organised and conducted from 23.6.69 to 5.7.69. The Course was directed towards training of Lady Health Visitors (working in various MCH Centres of the Project) in integrated MCH and Family Planning approach.

The course was held at Riaz Ali Shah Community Health Centre at Ichhra, Lahore, and was jointly conducted by the West Pakistan Family Planning Board and the West Pakistan MCWA. The training programme was divided in two parts. During the first week participants were educated and trained in

Family Planning, and teaching programme was organized and conducted by the Family Planning Board. During the second week the course covered comprehensive MCH service concept emphasizing plan of operation of the project.

Following Lady Health Visitors from the 5 cooperating District Association Centres and from Riaz Ali Shah Centre of West Pakistan MCWA under took the course :—

(1) Miss Zakia Qadir, LHV I/C CHC Riaz Ali Shah, Ichra, Lahore.
W.P.

(2) Miss Najma Chaudhry, LHV CHC, Riaz Ali Shah, Ichra, Lahore.
MCWA

(3) Mrs. Sughra Khanum, LHV I/C CHC Dil Mohd Road, Lahore.

(4) Mrs. Iqbal Iftikhar, LHV I/C CHC Kot Ghulam Mohd, Kasur.
Distt : Lahore.

(5) Mrs. Inayat Sheikh, LHV I/C CHC Shahbaz Road, Kasur.

(6) Mrs. Nasim Rafi, LHV I/C CHC Sargodha.
Sargodha Distt : MCWA.

(7) Mrs. Jamila Tasnim, LHV I/C CHC, Sialkot.
Sialkot Distt : MCWA.

(8) Miss. A.H. Kishwar, LHV I/C CHC Lyallpur.
Lyallpur Distt : MCWA.

(9) Mrs. Riaz N. Jang, LHV I/C Jhelum.
Jhelum Distt : MCWA.

Since MCWA intends to expand its integrated MCH and Family Planning services and extend them to Nawab Shah etc. The following Lady Health Visitor was also imparted training :—

(10) Miss Shamim Bano, LHV I/C CHC Nawabshah.
Nawab Shah Distt NCWA.

(11) The New Health Education Officer of the West Pakistan MCWA, Mrs. Parvaz, B.A., B. Ed. was also included amongst trainees.

- (d) All the trainees were given return interclass tickets, and an allowance of Rs. 3/75 per day. Their boarding and lodging arrangements were made and free transport was provided. A picnic party and a tea-party were arranged for the recreation of trainees. The course was conducted in friendly environment and was greatly enjoyed and appreciated by trainees.

M.C.W.A. gave a Lunch party in honour of the trainees and entertained important guests and various teachers involved in the training programme. The contents of the training were as follows :—

Ist Week ;

DATE	TIME	SUBJECT	NAME OF THE SPEAKER
23.6.69,	8 to 10A.M.	Why Family Planning.	Mr. Bhatti.
	10 to 11AM	Review of Anatomy & Physiology of Reproduction.	Dr. S. Hashmi.
	11 to 1P.M.	Demonstration of IUD.	Dr. S. Hashmi.
24.6.69.	8 to 10A.M.	Contraceptive technology.	Dr. Aman-Ullah Khan.
	10 to 12 noon.	Contraceptive technology.	Dr. S. Hashmi.
	12 to 2P.M.	Practical & Film show	
25.6.69.	8 to 9A.M.	Other drugs	Dr. Aman-Ullah Khan.
	9 to 11A.M.	Administration in Family Planning (a) Scheme objectives. (b) Structure	Mr. Bhatti.
	11 to 12 noon.	I.U.D. Demonstration.	Dr. S. Hashmi.
	12 to 2P.M.	Film (Contraceptives).	

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26.6.69	8 to 10 A.M.	Record Keeping and clinical management.	Miss Azra Jabeen.
27.6.69.	8 to 10A.M.	Motivation for Family Planning.	
		1. Community structure	Miss Azra Jabeen.
		2. Social Values, Customs, Taboos.	
		3. Follow up motivation.	
	10 to 12 Noon.	Religious View Points.	Mr. Nawaz Roomani.
	12 to 2P.M.	Practicals.	
28.6.69	8 to 10A.M.	Recognition of leaders and use of Mass Media.	Mr. Nawaz Roomani.
	10 to 11A.M.	Public Health Nursing and Family Planning.	Miss Middlemiss.
		2nd Week	
30.6.69	8 to 10A.M.	Home Visiting of area of Ichhra Centre:	
	10 to 11A.M.	Public Health Nursing	Miss Middlemiss.
	11 to 1P.M.	M.C.H. Centres and its activities.	Dr. Naseema M. Ismail.
1.7.69	9 to 10A.M.	Health Education at M.C.H. Centres.	Mr. Abdul Hamid Lone,
	10 to 12 Noon.	Health Education.	Mrs. N. Nawaz.
	12 to 2P.M.	Practical Training M.C.H. CENTRE Work.	
2.7.69	8 to 10A.M.	Nutrition, under Nutrition and Malnutrition.	Mr. F.R.M. Alvi.
	10 to 11A.M.	Health Education.	Mrs. N. Nawaz.
	11 to 12 Noon.	Duties of L.H.V.	Miss. Rashida.

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- 12 to 2P.M. Practical Training—MCH centre work. Dr. Ismail.
- 3.7.69 8 to 9A.M. Nutrition. Mr. F.R.M. Alvi.
- 9 to 11A.M. Comprehensive M.C.H. Care and its constituents. Prof. A.H.Awan.
- 11 to 12 Noon. Health Education. Mrs. N. Nawaz.
- 12 to 2P.M. Filling of Proformas and Family Planning Cards. Dr. Naseema M. Ismail
- 4.7.69 8 to 10A.M. Integrated F.P. and MCH services-our objectives and plans for achievement of objectives. Prof. A H. Awan.
- 10 to 12 Noon. M.C.H. Centre activities and role of health visitors. Prof. Mrs. A. K. Awan
- 12 to 1P.M. Smallpox-Pilot Project in Pakistan. Dr. A. Mannan.
- 1 to 2P.M. W.P., M.C.W.A - Organization, management, fund raising & policies. Ch. Naseer.
- 5.7.69. 8 to 10A.M. Nutrition Education (Methods of Health) Mr. F.R.M. Alvi,
- 10 to 11A.M. Education in MCH Programme. Prof. A.H. Awan.
- 11 to 12 Noon. Instructions for use of UNICEF supplies. Mr. Riaz.
- 1.30. to 3.30 P.M. Official Lunch and award of Certificates of training at Hotel Intercontinental. Host : West Paksitan. M.C.W.A.

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VII. PROFESSIONAL EDUCATION THROUGH MOTHER & CHILD

To project the concept of Integrated MCH and Family Planning Services and advocate comprehensive MCH care, MCWA decided to print suitable articles in the monthly magazine *Mother & Child*, and provide its copies to all technical personnel engaged in the project. Consequently space for 4 pages was purchased at cost price in the magazine. An allocation of Rs.50/- per month was made for enabling the management to offer it to one writer each month for writing articles on family planning. Following material on family planning has so far appeared in this magazine :—

I. APRIL ISSUE

- (a) "Medico-social Research of the M.C.W.A.P.," pp. 2—3.
- (b) "A Case for Vasectomy in the Family Planning Programme in East Pakistan," by Dr.A.I.M.M. Islam, pp. 4—10.
- (c) "Public Health and the Family" by Dr. F. Rosa, Chief of MCH Unit, W.H.O., pp 11—15.
- (d) "The Century of the Wanted Child," by Neelam Hussain, pp. 19—24.

2. MAY ISSUE

- (a) "Induced Abortion—The Experience of other nations," by Dr. Malcolm Potts, pp 4—8.
- (b) "F.P. News : International Planned Parenthood Federation-History and Development," pp. 33—37.
- (c) "MCWAP News : Programme for Emphasis on Family Planning as an Integral part of Maternal and Child Health of MCWAP". p 38.
- (d) "Late MCWAP NEWS," p. 37.

3. JUNE ISSUE

- (a) "Locating Barriers to the Spread of Family Planning", by Dr. Anwar-ul-Haque, part I.
- (b) "World-Wide Problem of Abortion-Latin America," by Rolando Armijo.

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During the 3 months under report family planning subject had a coverage of 36 pages against the contracted space coverage of 12 pages. We are highly grateful to MCWAP and the Editorial Board of Mother & Child for their whole hearted support.

IX. TOURING FOR SUPERVISION

The following officers visited MCH Centres for the purpose of supervising the work of integrated MCH and Family Planning project :—

MAY, 1969

Dr. Mrs. A. K. Awan, Chairman, Experts Committee :

Jhelum — 10th to 11th May, 1969,

Chaudhry Naseer Ahmad, Executive Director.

Jhelum — 4/5th May, 1969.

22nd May, 1969.

Sialkot — 21st May, 1969.

Miss Rashida Akhtar, Nursing Supervisor.

Jhelum — 13th May, 1969 to 25th May, 1969.

Lyallpur

&

Sargodha — 31st May, 1969. and 1st June 1969.

Ch. Naseer Ahmad, Executive Director.

Kasur — 7th and 26th May, 1969.

JUNE 1969.

Chaudhry Naseer Ahmad, Executive Director.

Sialkot — 4/5th June 1969.

Miss Rashida Akhtar, Nursing Supervisor.

Lyallpur — 4th June, 1969.

Sargodha — 5th May, 1969.

Sialkot. — 17th May, 1969. to 21st May 1969.

Dr. Naseema M. Ismail, Associate Director MCH.

Inspected Kasur Centres during the months of May and June, 1969 twice a week.

X. FREE ISSUE OF CONTRACEPTIVE TO PARTICIPATING UNITS.

Finding that various health centres were facing difficulties in procuring supplies of contraceptive materials, West Pakistan MCWA decided to purchase supplies at Lahore and supply them free to various units. Further supplies will be purchased by

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each unit out of sale dues recovered through issue of these supplies and through funds allocated by District Associations. Following financial allocation was made for this purpose.

1. Ichra Demonstration Centre Lahore	— Rs. 200/—
2. The two Kasur Centres at Rs.50/—per centre.	— Rs. 100/—
3. D.M.R. Centre, Lahore.	— Rs. 50/—
4. 4 District Centres at Rs. 50/—per centre.	— Rs. 200 —
Total :—	— Rs. 550/—

XI. EXPERTS COMMITTEE MEETINGS

These were regularly held on the 7th of each month and decisions taken by the committee implemented.

Experts committee has recommended that honoraria to private doctors attending District Clinics be raised to Rs.250/—in place of Rs.100/—as at present offered. MCWA is trying to find resources for meeting extra expenditure involved in implementing this recommendation.

Expert Committee has also expressed opinion that a whole time additional health visitor should be made available at all centres cooperating in this venture, as performance otherwise cannot be expected to be according to fixed objectives. Carrying out of this recommendation will require hiring 7 additional lady health visitors at Rs.190/-P.M salary plus Rs.20/-as interim relief, plus Rs.50/-as house rent allowance (Total Rs.260/-P.Mper L.H.V.) Total additional expenditure amounts to Rs.21,840/-per year. MCWA is unable to meet this additional expenditure out of its existing budget and therefore implementation of this recommendation will have to wait till resources become available.

XII. EXPENDITURE STATEMENT FOR 3 MONTHS

This as following :

Statement of Expenditure : (as on 30th.Jun.1969).

1. Honoraria to 4 District Branches to pay the part-time salaries to Doctors.	...	1,200.00
2. Salaries to the staff i.e. Director MCH, Director Public Health Nursing, LHV's, Typist. Driver and a Peon.	...	4,896.14
3. Transport Expenditure	...	449.27
4. T.A. & D.A. to the staff	...	352.20
5. Payment to the contributors of articles	...	400.00
6. Contingencies i.e. postage, stationery etc.	...	453.81
Total :	...	6,951.42

Total expenditure = Rs. 6,951.42

Quarterly grant received = Rs. 6,750.00

Over-spent. = Rs. 201.42

XIII. Incentives :

At the recommendation of the Experts Committee, MCWA has announced a prize of Rs.250/-for the LHV incharge of a centre, participating in the

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project, who first reaches the operational target i.e. 450 productive-age woman under contraceptive cover, provided she attains this goal within next six months i.e. by the end of December, 1969.

Further all those LHV's who succeed in attaining the operational target will be given one advanced increment. Further those LHV's, who succeed in keeping 450 mothers under contraceptive cover for a continuous period of one year will receive another advance increment.

MCWA, in consultation with its staff has adopted the policy that all payments made to staff by Family Planning Board for doing I.U.D. work will be pooled and then distributed amongst all staff of the centre concerned in proportion to their total salaries. This measure has been taken to avoid friction and neglect of various aspects of comprehensive MCH care for the sake of money coming through I.U.D. work.

1. T.A. & D.A. to the staff	21,120
2. Payment to the contributors of articles	100.00
3. Contribution to the postal charges etc.	12,120
Total :	33,240

Total expenditure	Rs. 33,240
Country grant received - Rs.	2,500.00
Overhead - Rs.	500.00
Net Income	Rs. 30,240

At the recommendation of the Experts Committee, MCWA has announced a prize of Rs. 2,500 for the LHV Institute of a centre participating in the XIII. Incentives.

BOOK REVIEWS

1. SCREENING OF HEALTH : THEORY AND PRACTICE by Ferrer, H. P., MB, M. P., ChB, DPH 1968 (pp. xi+211, 55 s). London : Butterworth & Co. (publishers) Ltd.

This book is based on material originally compiled by the Author for Diploma of Public Health, University of Liverpool, England. He has dealt with the values and limitations of the different screening tests available for the detection and prevention of disease in a particular community. This book would be of much interest to the Public Health Officers.

2. THE VITAMINS IN HEALTH & DISEASE. A MODERN REAPPRAISAL by Marks, S. J., MA, MD, MRCP, FCPATH. 1968. (pp. 183, 60s) London : J. & A. Churchill Ltd.

The Author has reviewed the present state of our knowledge about the importance of vitamins and has tried to explain their role in biochemical reactions in the body and the relationship with diseases especially in the underdeveloped countries. The book has been divided into three parts : the first dealing with general considerations, the second with chemistry, sources, metabolism, requirements, deficiencies in animals and humans and the dangers of overdosage. The third part describes the technical aspects such as vitamin assays, examination of vitamin nutritional status, vitamin losses in storage and preparation of foods and the laboratory tests for deficiencies. This book would be of much help to medical students, general practitioners, veterinarians and dietiticians.

3. PAUL WOOD'S DISEASES OF THE HEART AND CIRCULATION. Third Ed. 1968. (pp. xvii+1164, £ 10. 10 s), London : Eyre and Spottiswoode.

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This famous book has been revised and brought up-to-date by friends and colleagues of late Dr. Paul Wood. It presents a comprehensive account of cardiology. The illustrations are adequate and beautiful. A great deal of new material including the role of lipids in coronary arteriosclerosis, management of cardiac arrhythmias, modern views on Rheumatic heart disease have been incorporated. It is recommended as a good companion to the physicians and as a guide to the postgraduate students.

4. CLINICAL CHEMICAL PATHOLOGY. By Gray, C. H., DSC, MD, FRCP, MRCS, FRIC, FC Path. 5th Ed. 1968. (pp. vii+238, 21s). London : Edward Arnold (Publishers) Ltd.

This book is based on lectures in Chemical Pathology delivered to the medical students at King's College Hospital Medical School. It presents the subject in a concise form emphasizing the values and limitations of the analytical procedures. It has been revised and brought up-to-date. It is recommended to the Clinical pathologists, Housemen and Registrars. It is an essential book for the postgraduate students preparing for the Diploma in Clinical Pathology.

5. PRACTICAL HAEMATOLOGY by Dacie, J. V., MD, FRCP, FC Path. and Lewis, S. M., BSc, MD, DCP, MCPath. Fourth Ed. 1968. (pp. vii+568, 20s ELBS Ed. paper back.) London : The English Language Book Society & J. & A. Churchill Ltd.

This practical handbook has been completely revised, rewritten and brought up-to-date. Newer techniques including use of auto-analysers have been incorporated. This book is primarily meant for students preparing for Diploma in Clinical pathology but would also be useful to the Physician, haematologist and pathologists.

6. LECTURE NOTES ON PATHOLOGY. By Thompson, A.D., MA, MD, MRCP, FCP Path. & Gotton, R.E., MD, MS, M.C. Path. 2nd Ed. 1968. (Pp. xvi+1138, 63s) Oxford & Edinburgh : Blackwell Scientific Publications.

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This book has been based on series of lectures delivered by the Authors to the students at the Middlesex Hospitals Medical School. The text has been thoroughly revised. The book is divided into two parts : General Pathology and Special Pathology. About 76 tables and illustrations are also given. The subject has been presented in a concise form though at places it is very brief. It would be a useful guide for the students preparing for the Second and Final Prof. MBBS examinations especially for rapid revision near the examinations.

7. **APPLIED DENTAL MATERIALS** by Anderson, J.H., M.D.S., L.D.S. 3rd Ed. 1967. (Pp. 380, 50 s) Oxford & Edinburgh : Blackwell Scientific Publications.

This book on use of materials in modern dentistry has been revised and brought up-to-date. The properties and manipulations of a great variety of dental materials including plastics and ceramics are described. The text is simple and illustrations good. The chapter and subject headings are clear and well chosen. It is a very good text book for use of dental student and practitioner.

8. **A NURSE'S GUIDE TO ANAESTHETICS, RESUCITATION & INTENSIVE CARE** by Norris, W., M.D., F.F.A.R.C.S. & Campbell, D., MB, ChB., F.F.A.R.C.S., D.A. 4th Ed. 1969 (Pp. 164, 25 s). Edinburgh & London : E. & S. Livingstone Ltd.

This book gives a clear account of the duties of a nurse in preoperative, during the anaesthesia and postoperative care of a patient. The subject matter is clear, brief and to the point. It is strongly recommended to the student nurse, Tutor Sister, and Technician working in the operation theatre.

9. **MICROBIOLOGY IN MODERN NURSING** by Winner, H I., MRCP. F.C.Path. 1969. (Pp. 182, 20 s). London : The English Universities Press Ltd.

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The nursing staff of a modern hospital should know the basic principles of Microbiology. Hospitals infection and cross infection are major hazards in a general hospital. This book attempts to give a working knowledge of the subject needed for a Nurse. The subject has been dealt in a clear and concise form. All the major aspects of microbiology such as spread of infection, various types of infection, sterilization, immunity and treatment have been presented. It is strongly recommended for the student nurse and Lady Health visitor,

ZAFFAR UL AZIZ

W.P.H.S. (I)

M.B.B.S. (Pb), D. Bast (London)

M.C. Path. (London)

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