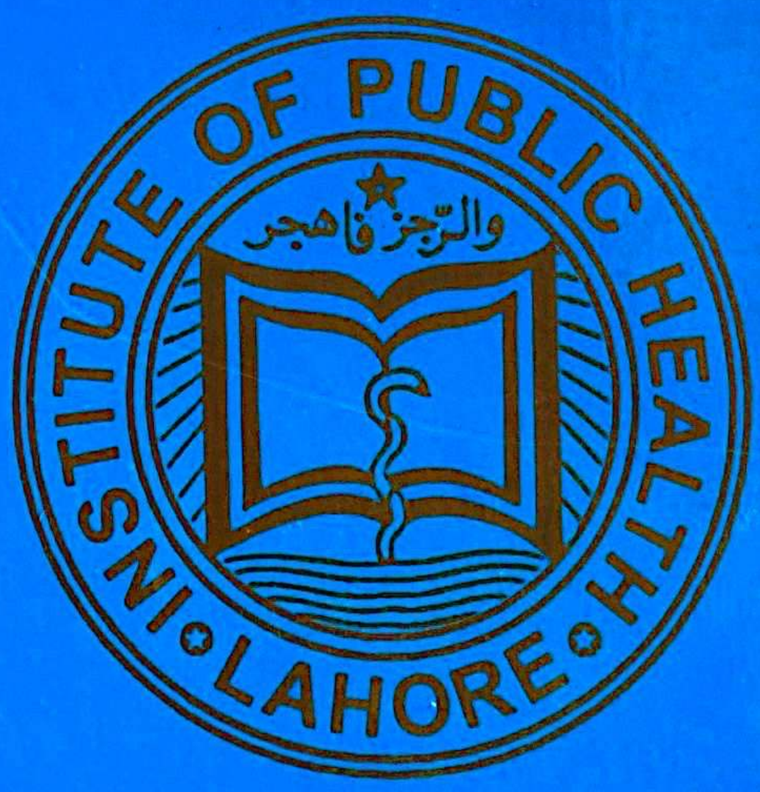
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GUEST EDITORIAL

MULTIFACED APPROACH TO COMMUNITY ORIENTATION TRAINING

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Summary

Improvement in health profile of population living below the poverty line, with low level of education, unbridled population increase, poor economic performance and less than adequate access to health services demands multifaced approaches, which inter-alia cover socioeconomic denominators. With this object in view Baqai University partnering the community and related professions, has established in a defined population, a multifaceted project which provides opportunities of education, agricultural improvement, water supply and minimizing gender disparity. This project is utilized for community orientation training of medical students. Effectiveness of the service delivery is monitored through health indices and focus group interviews and data analysis. Efficiency of students training is evaluated through a scoring system. Analysis of health indices shows a reduction of MMR from 9 to5 and IMR from 100 to 45 during a six year period. Community perception shows a satisfaction level while evaluation of students in community health although their functioning with efficiency can only be determined by a followup study.

Introduction

Baqai University Medical College established a community orientation training model in the rural area around the College which is at a distance of 15 km. Prior to the establishment of this model, the following steps were taken:

1. Identification of the community needs.
2. Baseline survey.
3. Planning and establishment of primary health care centers
4. Study of the traditions and health beliefs of the community and finally, integration of these beliefs in the family health care system where indicated.

Identification of the Community Needs

A three-member team of the College visited the area in early 1987 known as Gadap the total population of which is estimated to more than 100,000. The visit was confined to a 20,000 population segment. The needs identified were as follows:

(a) Scarcity of water supply resulting in difficulties of potable water to the population. The boring which tapped water at 30 ft level three decades ago had reached a level of more than 400 ft. Nevertheless the community expressed possibility of potable water.

(b) *Decline in agricultural crop*

The community expressed a decline in agricultural crop and therefore the community suffered basic requirement of vegetation and other agricultural production thereby reducing the marketable consignment. Difficulty was also expressed in obtaining fodder as a result of failure of agricultural crop.

(c) *Low Income*

Economic status of the community was expressed at such a level that families were finding it difficult to maintain a lifestyle that is commensurate with good health. Small shopkeepers were provided with a returnable loan to expand the sale of their goods and make small returns on a daily basis.

(d) *Lack of Education Facilities*

Inadequacy was evident in the number of educational institutions even at the primary level. Children who needed education did not

have enough facilities within the local community and on many occasions had to resort to migration to the city for this purpose.

Partnership with Government, provided motivation for establishment of more schools in the area in the subsequent years.

It may be interesting to note that community at this stage did not express the need for health services although they did not mention that the rural area in general had less than access to health services.

Identification of these needs clearly indicated that the first step for establishing a training model was to meet the health needs of the community, and therefore, the team of staff members arranged a collaboratory effort to seek partnership with Government, Non-Government Organizations and the community. This partnership enabled the provision of returnable loan for boring a tubewell at a cost of Rs. 150,000. The boring resulted in the supply of water which originally was potable but subsequently became brackish. Nevertheless it proved useful for a good many agricultural crops. The community was also motivated to conserve whatever water was through and motivate an action program for kitchen garden as a step for conservation of the available water supply. Secondly the community was advised to water agricultural crop through a container and not through service pipe.

Socio-economic Survey

A sample survey for 600 houses indicated that a majority of the houses were either half cemented or mud plastered devoid of vantilation. The average number of persons per housing unit is 4.40, average number of rooms per housing unit was 1, average number of persons per room was 5, literacy rate was 20% of the population with more non-literate women. The average per capita income was estimated at $50 per annum.

Age Distribution

Children 0-5 years (% of total population)	27
5-15 years (% of total population)	40
15-45 years (% of total population)	14
Population above 45	Not known

Toilet facilities were found to be 1 for 23 patients.

Generally open fields were used for toilets.

Electricity was present about 25% of the houses.

Generally the residents were farmers by occupation but farming was on the decline.

Planning the Establishment of Primary Health Care Centre

Towards the completion of the survey, a multifaced project was established at the local community known as Konkar. The community leaders noticed possible improvement in water supply through donkey carts and improvement in agricultural crop for which seedlings were provided through NGOs and the Department of Agriculture. These seedlings were for fruits and vegetables as well as wood plantation. At this stage almost towards the one of one year, the primary health care center was established within the community for which the Government of Sindh provided physical facilities and technical support was provided through Baqai University in partnership with Adventist Development and Relief Agency (ADRA).

Soon after the provision of the PHC Center, a need was felt for identification of the health beliefs and traditions of the community. Students were involved in obtaining responses through a questionnaire and the following health beliefs were identified through this survey.

Traditions

(1) *ORS:* General impressions of the families was that ORS is not a medicine. The rejection rate was more than 50% in favour of medication. 35% did not know the correct method of preparation and administration of ORS.

Immunization

The number of children with complete vaccination was 8.5% and with no vaccination was found to be 30.05%. The responses to health beliefs for rejection of immunization were:

(i) To avoid fever due to vaccine
(ii) Avoidance of pain to children
(iii) Ignorance about this project.

Beliefs about breast-feeding

More than 50% of the women put the infant to breast-feeding after 2 / 3 days based on the belief that colestrum did harm to the children.

Childbirth

Several families applied cow dung to umbilical cord after cutting.

Treatment of Wounds

Belief was that sand had a healing power.

Prevalence of Tetanus accounted for a high infant mortality as a result of these practices.

Personal Hygiene

Personal hygiene habit washing the hands after toilet, daily bath, brushing the teeth technique, nail cutting and frequent changing of clothes was not in practice by 42% of the population. 23% of the population were spiting anywhere.

The programming after the study of the factors of the various facets mentioned above was the expansion of PHC activities to form a network of 7 centers. At this stage, measurement of mortality and health indices in a sample survey of under 5 showed:

No. of deaths:

diarrhoea	31.6%
Tetanus	16.4%
Malnutrition	6.8%
Accidents	6.8%
Measles	4.1%
Pyrexia	2.7%
Neurological	1.4%
Disorders	
oedema	1.4%
Jaundice	1.4%
Tuberculosis	1.4%
Polio	1.4%
Unknown	31.4%

Health indices show that infant mortality was found to be 106 per 1000 live births and maternal death rate was 9 per 1000 live births.

Family Planning

There was a high rejection rate by males due to the belief that it meant reduction of the local population and the community needed manpower for farming.

Unwholesome Practices

Neglect of Female children: Women had a low priority in eating food and had to depend on leftovers of the menfolk. Priority in the family was for male children resulting in negligence of female children.

Establishment of a Coordination Committee

A Coordination Committee was constituted to avoid duplication of work and for collaboration of health work. This Committee consisted of representatives of the University, Governmental and non-governmental organizations and ever since its constitution, it has been conducting quarterly meetings to discuss the programs of work. (See encl.)

Students Involvement in the PHC Network

Students Involvement in the PHC Network with multi-dimensional approach from the very beginning and the various activities were divided in three phases as shown below:

Phase I - at primary level care
* community diagnosis
* health promotion
* disease prevention
* behavioral sciences
* clinical orientation
* application during field visit to community
* research principles (epidemiology & bio stats) (192 hours in 1st & 2nd year of medical education)

Phase II - at secondary level care
* problem oriented case management working with family medicine physicians
* applied behavioural sciences (eg. Smoking cessation, behaviour modification techniques) (96 hours in 3rd year of medical education)

Phase III - at tertiary level care
* inpatient care at urban (Baqai Hospital Nazimabad) and rural (Fatima Hos-pital, located with in the University)
* (144 hours 4th year of medical education)

Partnership of multi-faceted model sharing PHC activities is shown in enclosure.

With the establishment of PHC net work, a referral system was organized wherein cases were referred to the Baqai University Hospital for tertiary care. Owing to the inability of the local population to pay for the services, the hospital provides complimentary service.

Intervention provided was:

(i) through a network of PHC services
(ii) health counselling for behavioural change.

Behavioural Change

Changing behaviour in a traditional society is time consuming and a difficult path. The skill of behaviour change like any other clinical ability requires effort and a practice to master. However, in making any type of change in one's patients, the chances of success are increased by a systematic approach. This approach was provided through health counselling by the University staff.

ENCLOSURE

Partners of Multifaceted Model Sharing PHC Activities

Community

* Provides TBA'S / CHW'S
* Provides Facilities
* Women's Action Groups

District Council

* Provides EPI Supplies
* Provides DRS / Dispensers
* Facilities
* Family Planning Supplies

Hands

* Provides ORS / LHV'S
* Nutrition Demonstration
* Technical Support

Hands = Health and Nutrition Development Society

Co-Ordination Committee

* Meets Quarterly to Monitor Effectiveness of Heal TH Services
* Divides Responsibilities for Efficient Use of Limited Resources

Adra

* Immunization Services
* Growth Monitoring
* Health Education (DR / CHV / Dentist / Nurse
* Water / Sanitation Projects
* ORS
* CHW Training

ADRA = Adventist Development and Relief Agency

Baqai University

* Provides Health Manpower
* Oversees PHC Service Network
* Dental Screening / Education Services
* Ophthalmologic Screening / Education / Services
* Referral to 2° and 3° Care Levels at Baqai and Fatima Hospital

Student Assessment

Student's performance is a test by formal written examination as well as a continuous course assessment on the performance in the PHC activities. Students are involved in all the three levels of health care delivery viz. primary, secondary and tertiary level. The result of intervention after six years showed a decline in the health indices viz. reduction in Infant Mortality rate from 106 to 45 per 1000 live births and reduction in Maternal Deaths from 9 to 5 per 1000 live births.

The behaviour change noticed towards completion of this period were:

(i) Community totally stopped the use of cow dung to umbilical cord after cutting resulting in reduction of infant deaths.

(ii) Commencement of breast-feeding soon after the birth was accepted by the whole population.
(iii) Immunization coverage increased to 80% level.
(iv) Family planning practice was accepted without any prejudice.
(v) Personal hygiene practices improved from 20% to 60% level.

Other Areas covered by the Project

These include the extension of health service delivery to the middle income group in the city. These services covered a wide range of activities---screening for cholesterol, health counselling for high risk group, service for diabetic management, primary eye care, community psychiatry services, as well as family planning. Besides the activities in the foregoing paragraphs, more recently the University has established Women's Interest Group for non-formal education and counselling on health and health-related issues.

Research Activities

These constitute a norm of the departmental activities and so far the projects that have been completed relate to:

1. Anaemia in rural Sindh
2. Pregnancy anaemia
3. Vaccination coverage
4. Prevalence of stillbirths in North Karachi
5. Academic Detailing
6. Evaluation of ORT Corners

Student Generated Research covered the following:

1. Sociodemographic surveys
2. Knowledge, attitude and practice of:
   (a) Immunization
   (b) Breast feeding
   (c) Personal hygiene
3. Qualitative differences in urban and rural life style

Conclusion

In conclusion it should be stated that establishment of a training model should not be restricted to provision of health services alone but should embrace multi-faced activities, examples of which have been demonstrated in the Multi-faced model of the Baqai University.

The post intervention data show a decline in the sensitive health indices of Infant and Maternal Mortality and a change in the lifestyle and health beliefs.

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DOMESTIC USES OF IRRIGATION WATER AND ITS' IMPACT ON HUMAN AND LIVESTOCK HEALTH IN PAKISTAN

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Summary

The study documents, different uses and users of irrigation water in Hakra 6-R canal command area in Haroonabad, Punjab, Pakistan. It reports the users' perceptions about quality of water for non-agricultural uses and issues related to other uses of irrigation water in the study area. In general, the household families use water from village water tank / diggi. The water tank receives water from the canal on a weekly basis. The canal water allocation to the sample villages reveals that the average per capita daily water allowance varies between around 6-48 liters. Only 12% of the households have access to public water supply schemes. Regarding the average daily water use for various purposes by the households, the estimates show that water tank provides around 44% of daily water use. In total, the surface water sources account for 61% of the total water supplies (water tank, water supply scheme, and canal). The results show that current domestic use meets only 36% of the minimum daily water requirements of the household families. The estimates reveal that about 90 percent of the households were suffering from water-borne diseases. About 74 percent households reported use of surface water (Water tank, Supply scheme etc.), through applying simple cloth filter. The study proposes that further research should be conducted to document the economics of non-irrigation uses of irrigation water and water quality and its impact on human and livestock health.

Introduction

In Pakistan where 69 percent of its population lives in the rural areas (GOP, 1995). The irrigation water supplies to rural areas have multiple roles to play for the sustainable development, by their contribution in the agricultural and non-agricultural uses. A large segment of rural population in the Punjab is deprived of public sector drinking water supply and sanitation facilities. Instead of the best efforts of the Punjab government to the rural water supply and the drainage sector, the situation remains very precarious. Presently about 44 percent of the rural population in the Punjab has access to clean drinking water. Rural population served with the sanitation facilities in the Punjab is only 21 percent (Jatala, 1995).

Through the review of literature, we found that most of the studies in Pakistan, conducted in the past revolved around the agricultural uses of the irrigation water and non of the study in Pakistan provides us any pragmatic estimates on the contri-bution of irrigation water to the non agricultural uses in terms of provision / use of water for households, livestock, wild life and aquaculture Altaf et al., (1989), Altaf et al., (1993), Islam et al., (1992), Rahman et al., (1988). Thus, in the absence of such estimates, these additional benefits are likely to be ignored when the irrigation management practices like warabandi schedule / canal closure etc., are modified to maximize the agricultural output per unit of water. For example, seasonal / rotational water supplies in distribu-taries / minors will result in their closure for long period and will deprive populations of water supplies for other needs. The closure of canal, with or without ground water supplies pumping (fir meeting irrigation demands), will result in lowering the water tables and will dry-up drinking water well in sweet water zones and will lead to the intrusion of saline / marginal water in the brackish water zones.

Thus, while representing the impact of irrigation supplies on the rural productivity, it is very critical to take in to account the distinction between the agricultural and non agricultural uses of irrigation water, other wise the analysis will be seriously flawed and will lead to under estimation of the benefits accruing through the modified irrigation management practices. Only few research studies have been conducted in Pakistan regarding the rural water supplies and mainly they were focused on the rural water supply policies or evaluation of the rural water supply program in Punjab (Altaf et al., 1993, World Bank Water Demand Research Team, 1993 and Rehman et al., 1988). Similar investigations have also been conducted in India (Griffin et al., 1995, Singh et al., 1993 and Bhatia, 1992). Non of these inquiries talked about the non agricultural uses of irrigation water, especially in the rural areas which falls in the sweet / brackish water zones, where the irrigation supplies serves as the major source of water supply for household uses (micro enterprises).

In Pakistani rural conditions the problems in brackish water zones are different from the sweet water zones. In the brackish water zone, the people are bound to use the irrigation water for their domestic uses. Irrigation water is weekly added to the unpaved open community pools and then the whole village community directly takes water from these pools for their household consumption without any formal filtration or treatment. Further more the water of these pools get contamination and is being polluted when animals of rural household are taken to these community pools, as these pools also serve as the source of drinking water for the domestic animals.

In the sweet zone most of the times the rural communities use the ground water for the household consumption. Due to the non-availability of proper drainage facilities, the people construct the soaking pits 25-30 feet deep and connect the septic tanks of their toilets with those pits. Usually an electric motor pump or a hand pump is also installed in the vicinity. This leads to serious health hazard, if the water from the soaking pit mixes with the layer of fresh ground water. In some of the areas where the public water supply facility has been provided this problem is more severe as the drainage conditions in those rural areas are much worse as compare to the others. It leads to the frequent incidence of water related diseases. It is estimated that 30 percent of all reported cases of illness and 40 percent of all deaths in Pakistan are attributable to water borne diseases nd the main sufferers are the rural inhabitants (GOP, 1988). Further more enormous amount of work hours due to such poor conditions constitute a significant economic loss to the rural households.

The present study documents the spatial comparison of non agricultural uses of IRRIGATION water by different users located in the Head, Middle and Tail reaches of Hakra 6-R Distributary in Tehsil Haroonabad, Punjab, Pakistan. The provi-sion of water in the H-6-R Distributary depends upon a number of upstream IRRIGATION Link Canals and Barrages. From the left bank of the Sulemanki Headwork, Eastern Sadiqia canal originates and after covering a distance of about 46 miles (74 kilometers) split into Hakra Branch canal, Malik Branch canal and Sirajwah Distributary. From the main Hakra canal, two distributaries originate near Head Mianwala Bangla, i.e., Hakra 2-L and Hakra 6-R Distributary while main Hakra canal continues its journey towards the tail reaches. The H-6-R Distributary covers a gross command area and a canal command area of about 51976-hectare and 42538 hactare, respectively. The main H-6-R Distributary is about 45 kilometers long and has 283 outlets. The authorized discharge of the H-6-R Distributary is 16.65 M^3 in Kharif season and 15.5 M^3 in the Rabi season. Out of the total (94) villages in H-6-R twenty-four villages (i.e., eight villages from each head, middle and tail reach of 6-R Distributary) were selected for the current study. The study investigates different sources of water, their quality as perceived by the users and the impacts of alternative sources of water in the saline areas on human and livestock health.

Objectives

The objectives of the study are to:

1. Document users' perceptions about quality of water for non agricultural uses; and
2. Determine the incidence of water borne diseases and their impacts on human and livestock population in the study area.

Data Collection and Analysis

A multistage stratified random sampling technique was used to select the sample from the study area. At the first stage H-6-R was stratified into Head, Middle, and Tail reach on the spatial basis. At the second stage, 24 villages were randomly selected from all of the three. Reaches (Figure 1).

At the third stage a sample of 120 households in each reach was selected. Thus the total sample size was 360 respondents. The data were collected from both the male and female head of the households, using a structured questionnaire that was pre-tested twice in the field. The data were entered in the field in a spreadsheet format using Q-Pro software. After data entry the data processing took significant amount of time and efforts. The Statistical Package for Social Scientists (SPSS) was used to analyze the data. Simple frequency distribution and cross tabulation was used for data analysis.

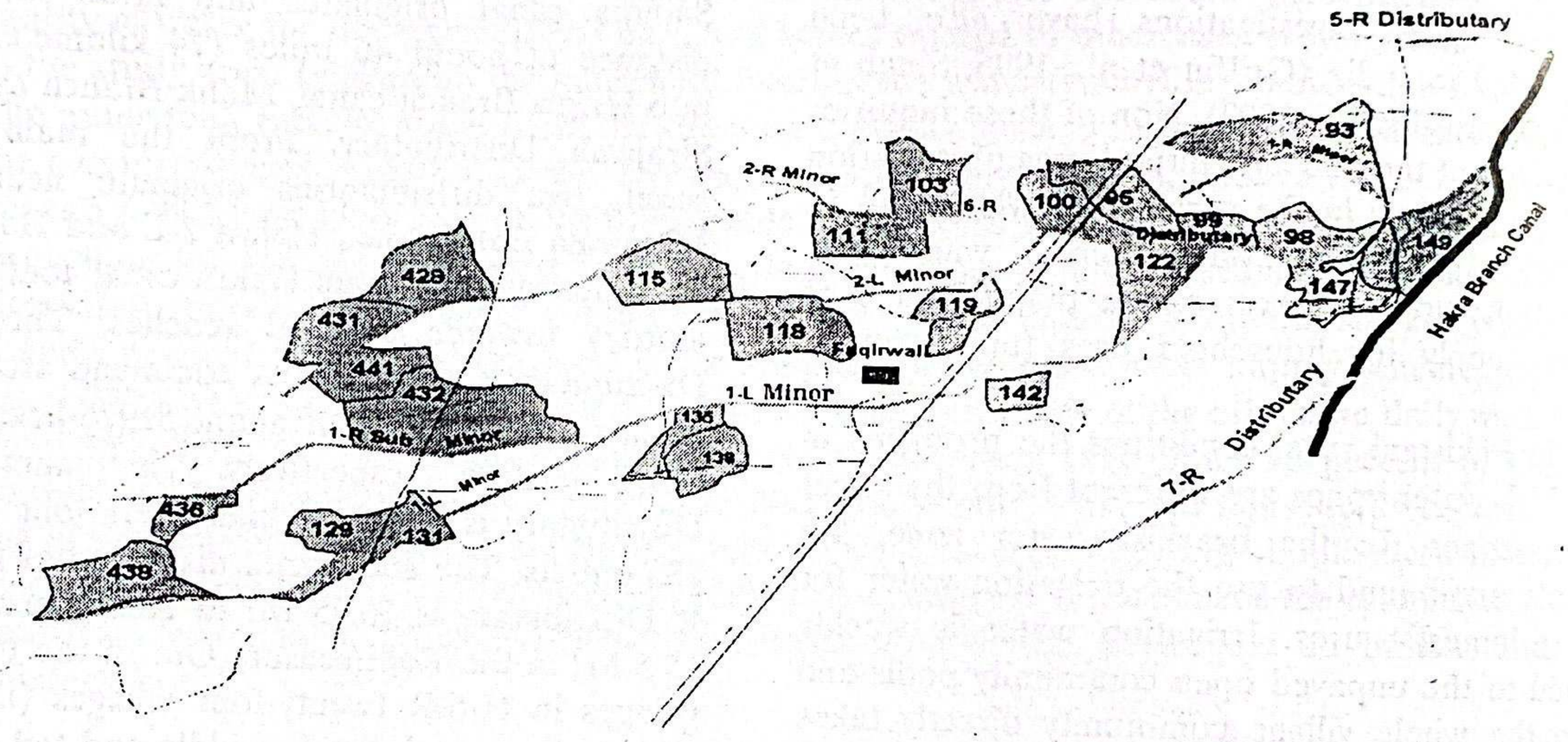


Fig. 1: Location of Sample Villages in Hakra 6-R Distributary in Haroonabad, Punjab, Pakistan

Results and Discussion

4.1 Quality of Water

About 58 percent of the respondents regarded the quality of groundwater better as compared to that of the surface water. Almost 62 percent of the respondents (who used groundwater) and almost half of the users of canal water and supply schemes were also unaware of the type of contamination. More than 55 percent respondents believed that dust particles and a mixture of dust, salt, sanitation wastage, insects, biological life, etc., contaminated the surface water. About 28 percent of the res-pondents opined the groundwater was contaminated with salts.

4.2 Impact of Non-Irrigation Uses on Health

4.2.1. *Water Borne Diseases in the Sample Households.*

The estimates revealed that 32 percent of patients suffered from malaria as compared to other water-borne diseases. The other most important water-borne diseases in the study sample were Dysentery (17%), Skin diseases (13%), Typhoid fever (11%), Cholera (9%) and Diarrhea (8%). About 12% of the respondents reported the incidence of other three diseases i.e., Jaundice, Kidney stone and Cancer. Higher incidence of Diarrhea was recorded in the Tail and the Middle regions (12% and 9% respectively) as compared to Head region (2.5%). The respon-dents infected by Cholera ranged from 9-10% in all the three regions.

4.2.2. *Perceived Impact of Domestic Water Supply on Human Health*

About 59% of the users perceived surface water as main cause for cholera, jaundice, kidney stone, malaria, typhoid, and skin diseases. On the other hand, only one respondent regarded groundwater as the main cause for

diarrhea. Around 75% were consuming groundwater for drinking purposes, which also points to their perception that the surface water caused diseases more than the groundwater.

4.2.2.1. Water *Associated Diseases and Expenditures Incurred by the Households*

The estimates reveal that about 90 percent of the households were suffering from water-associated diseases. Total financial loss (amount spent on treatment plus wages lost) was estimated to be Rs. 122949, Rs. 165938 and 236666 in the Head, Middle, and Tail reaches, respectively. Average treatment cost per household was worked out to be Rs. 1149, Rs. 1536 and Rs. 2132 in Head, Middle and Tail reaches, respectively during 1997.

4.2.2.2. *Diseases and the Source of Treatment*

Different types of treatment are used for the cure of various diseases i.e., traditional treatment from compounder, quack, and doctor depending upon income of the household, distance of doctor's clinic, acuteness of the disease, and availability of required medicines. Majority of the people got treatment from doctors for all the water borne diseases except malaria.

Only 37% of the sample households reported use of simple techniques such as boiling, chemicals (Alum or KMnO4) and cloth filtering. Like Haturusinha 1994, it was noted that frequency of using remedial measures particularly boiling of water and use of chemicals (mentioned above) was higher among edu-cated households than those with less edu-cation!

About 74 percent households reported use of surface water (Water tank, Supply scheme etc.), through applying only plain cloth filte-ring to avoid dust / silt, tadpoles. Water tank is the major source that needs some type of treatment, as it has more chances of getting polluted by dust / silt etc.

4.3 Impact on Livestock Health

About 60 percent of the livestock population held with the sample households is affected from different water associated disease like diarrhea, dysentery and foot and mouth disease etc. It is estimated that 48 percent of cattle, 70 percent of buffalo and 57 percent of goat population were affected from water associated diseases in 1997.

4.4 Impact on Environment

Almost 89 percent of the respondents perceived wastewater as the cause of problems for them. The percentage increases from Head to Tail region because Head and Middle reach farmers have comparatively better self made sewerage system as compared to the Tail reach villagers.

Summary and Conclusions

- Majority of the users did not know about the source of contamination in their water supply. Those who knew perceived that much of the contamination in the surface and groundwater was either local by origin or a combination of both local and remote pollutants.
- Many users (45%-88%) did not know about the type of contaminants. Those who knew opined that the surface water contained dust, animal and human excreta, sanitation water, insects and biological life. The main pollutants in the groundwater were salts.
- Frequency of water borne diseases was high (75%) during summer seasons as compared to the other seasons.
- Malaria, Dysentery, Skin problems and Typhoid fever are the most prevalent diseases of the whole area, incidence of that was comparatively higher in the tail region of the Distributary.
- Percentage of male adults and children infected by water related diseases were higher as com-pared to females.
- Around one-third of the sample households reported the adoption of remedial measures.
- Frequency of using remedial measures, particularly use of cloth filters and Alum salt etc., was higher among educated households than less educated.
- About 60% of the livestock population owned by sample households were affected by water borne diseases during 1997.

Areas for Future Research

6.1 Economics of Non Irrigational Uses of Irrigation Water

The current study has documented the users, the uses, the sources and the perceived quality of

irrigation water being used for non-agricultural uses and its impact on human and livestock health. The in-depth analysis needs to be conducted to estimate the economic benefits of the improved water analysis needs to be conducted to estimate the eco-nomic benefits of the improved water supply sche-mes in the area.

6.2 Water Quality and Irrigation

Poor quality irrigation water impacts on both human health and crop yields in irrigation systems. The agricultural activities in these systems also impact on down stream water users. There is need to conduct research on groundwater quality to develop guidelines for the use of low quality irrigation water to reduce the salinity problem for sustainable agriculture.

Control of Vector Born Diseases

The study reported the household's perception about the incidence of water borne diseases. A study needs to be conducted to test the statistical relationship between malaria, diarrheal diseases and the use of irrigation water.

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EFFECT OF AGE ON VISUAL EVOKED POTENTIALS

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Summary

The latencies and amplitude of visual evoked potentials (VEPs) were recorded in 30 healthy subjects to reveal the effect of age on VEPs parameters. Subjects were divided in two groups; C_1 (age 18-40 years) and C_2 (age 41-60 years), each having 15 subjects. Group C_2 subjects showed significantly ($P < 0.05$) prolonged latencies of VEPs than in group C_1 while P 100 amplitude difference was non-significant ($P > 0.05$) between the two groups. There was a very highly significant ($P < 0.001$) positive correlation between age and P 100 latency in group C_2.

Introduction

Visual evoked potentials are the gross electrical activity generated by the occipital region of the cerebral cortex in response to visual stimulation[1]. Recording of VEPs is an important non-invasive technique to assess visual functions in various disorders of eye, diseases of the nervous system, cases of fictitious visual loss and a number of other conditions[2-3]. The latency of P 100 (the most prominent positive wave of VEPs record which is generated by the visual cortex) is a very sensitive indicator of myelination and integrity of the optic nerve and its prolongation indicates involvement of the optic nerve[4]. Visual evoked potentials is a very sensitive technique to detect subclinical optic neuropathy in patients of diabetes mellitus[5].

The non-pathological changes in latencies of VEPs with advancing age becomes particularly important with increased use of VEPs in the clinical practice. It has been reported that peak latencies of visual evoked potentials, especially of P 100, are increased with advancing age, while peak amplitude of P 100 is very high in the teenage with reduction trend in the twenties. Later it remains constant with no significant aging effect[6-7].

It was observed by Celesia et al[8] that only small sized check pattern stimulus could elicit significant effect of age on the P 100 latency. The aim of this study was to reveal the effect of age on latencies and amplitude of VEPs.

Subjects and Methods

Subjects

Thirty healthy subjects were included in the study. Subjects were divided in two groups. Group C_1 comprised of 15 subjects with age range 18-40 years and group C_2 had 15 subjects of age ranging between 41-60 years.

All subjects had normal visual functions. Subjects with diabetes mellitus, neurological diseases and endocrinal disorders were excluded from the study.

Methods

The equipment used was Neurostar-Medelec 92 B. Visual evoked potentials of both eyes were recorded separately by placing three silver-silver chloride (Ag-AgCI) surface disc electrodes on the scalp at the following points[3] (Fig. 1).

(i) Active electrode (OZ) was placed 5 cm above the inion (the most prominent part of the occipital protuberance).

(ii) Reference electrode (FZ) was placed in a frontal position on the midline.

(iii) Ground electrode (FPZ) was placed on forehead in the midline.

The visual stimulus was a shift or reversal of checker board pattern (black and white) displayed on a television screen. The reversal frequency was 2 HZ. The smallest check size was used. Each

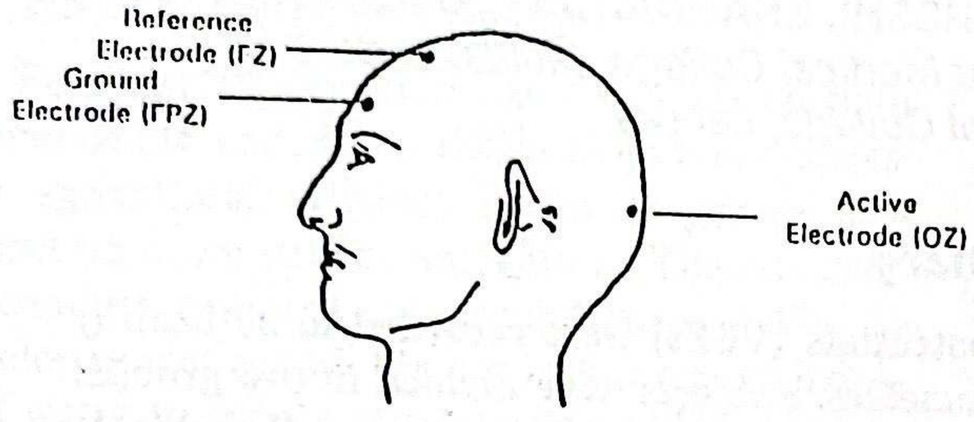


Fig. 1 Electrode Placement for the Recording of Visual Evoked Potentials (VEPs).

check was 6 mm on each side and subtended an angle of 20 minutes of an arc from 1 meter distance. Approximately 128 responses from each eye were amplified and averaged.

For analysis of results, students "t" test was applied to find out the significance of difference. Regression analysis and correlation co-efficient were also determined.

Results

The comparison of latencies and amplitude of VEPs between groups C_1 and C_2 is shown in Table

Table 1 *Comparison of Latencies and Amplitude of Visual Evoked Potentials (VEPs) between Groups C_1 and C_2.*

Latencies and amplitude of VEPs (Mean±SD)			
VEPs parameters	**Group C1 (age 18-40) n = 15**	**Group C2 (age 41-60) n = 15**	**P value**
N 75			
Latency (msec)	73.69±2.74	76.47±2.27	P<0.01 (HS)
P 100			
Latency (msec)	98.08±2.36	99.88±2.41	P<0.05 (S)
Amplitude (μv)	9.54±8.04	10.19±3.59	P>0.05 (NS)
N 145			
Latency (msec)	130.16±7.68	131.50±7.94	P>0.05 (NS)

S Significant
HS Highly Significant
NS Non-significant

1. The N 75 latency was prolonged highly significantly ($P < 0.01$) and the P 100 latency was prolonged significantly ($P < 0.05$) in group C_2 as compared to group C_1 (Fig. 2). The N 145 latency and P 100 amplitude were higher in group C_2 but the difference between the two groups remained non-significant ($P > 0.05$).

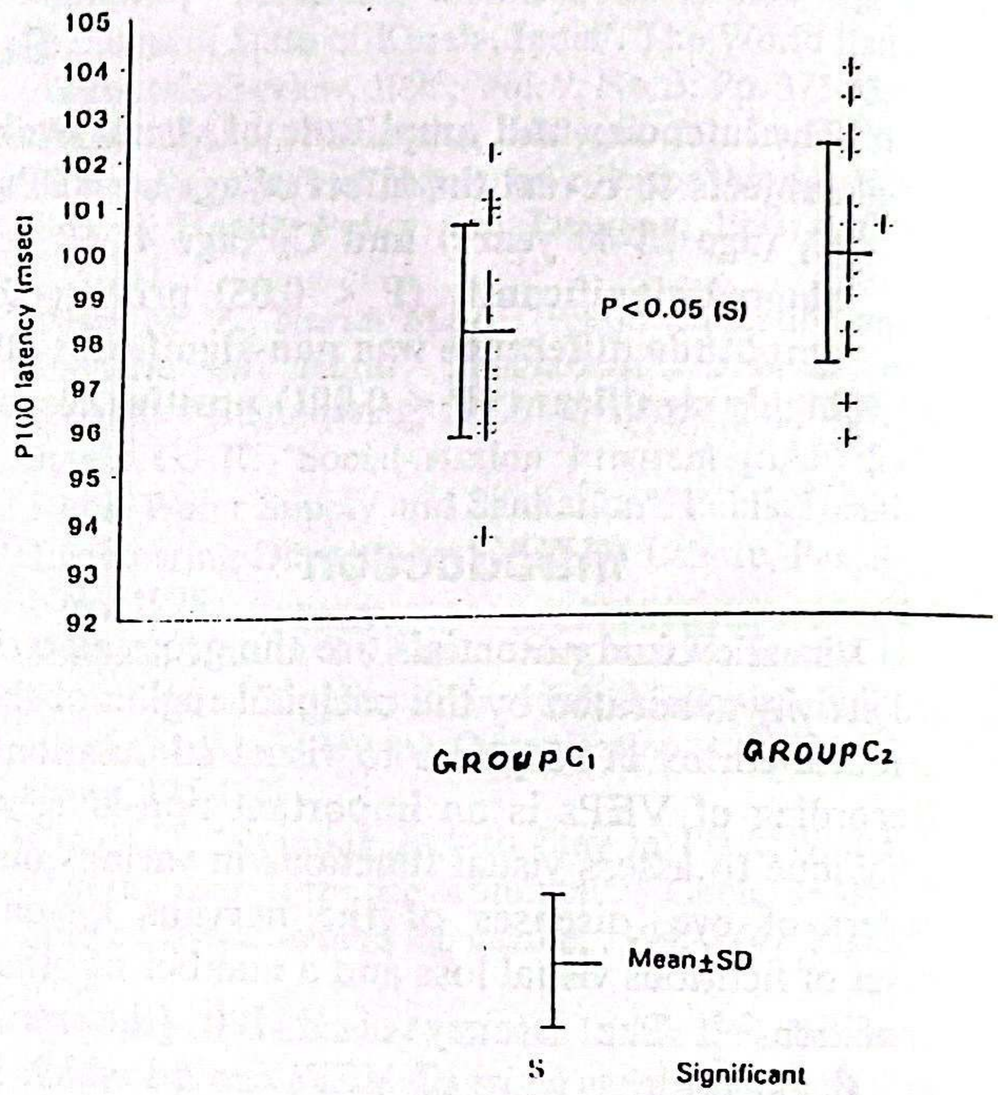


Fig. 2 Comparison of P 100 Latency between Groups C_1 and C_2.

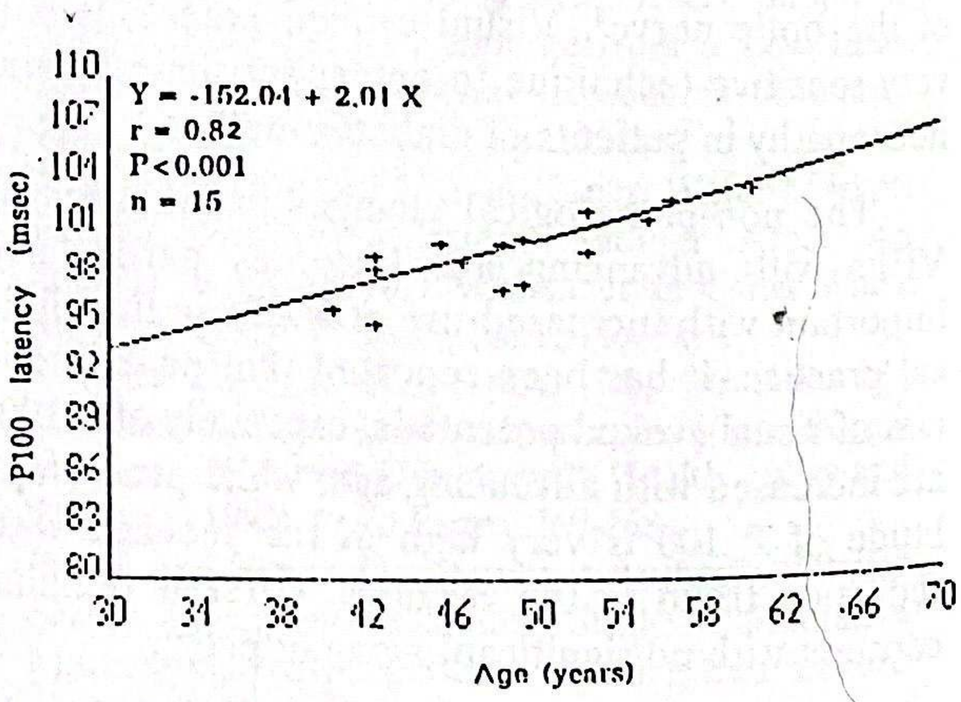


Fig. 3 Relationship between Age and P 100 Latency in Group C_2.

There was a very highly significant positive correlation ($r = 0.82$, $P < 0.001$) between age and

P 100 latency in group C_2 (Fig. 3) while in group C_1 this correlation was non-significant ($r = -0.14$, $P > 0.05$).

Discussion

The present study revealed significantly ($P < 0.05$, 0.01) prolonged latencies of VEPs in the group C_2 (41-60 years). In the same age group, the P 100 latency had a very highly significant ($P < 0.001$) positive correlation with age. Similar results regarding the effect of age on VEPs latencies have been reported by many workers[7-9]. In this study it was revealed that VEPs latency increase began in the fifth decade of life. As reported by Kazis et al[9] and Shors et al[10], in this study also the difference of P 100 amplitude between the two groups was non-significant.

The effect of age on VEPs may be due to reduction in retinal luminance resulting from the decrease in pupil diameter and a random neuronal cell loss in visual pathways caused by aging process[7-9].

It is concluded that there is significant effect of age on latencies of VEPs and the latency increase begins in the fifth decade of life. The age of subject must be considered while interpreting the prolonged latencies of VEPs.

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RECTO-SIGMOID CARCINOMA PRESENTING AS HAEMORRHOIDS

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Summary

Occasionally rectosigmoid carcinoma present as haemorrhoids distally. So it is important to rule out carcinoma before proceeding to surgery for haemorrhoids. This study was done to find out incidence of proximal recto-sigmoid carcinoma in cases clinically diagnosed as haemorrhoids. In 92 patients presenting with bleeding per rectum which were clinically diagnosed as suffering from haemorrhoids; sigmoidoscopic examination was done in all cases. In 5 cases out of 92 (5.4%) proximal carcinoma was present. Out of these 5 cases; in 3 carcinoma was in the sigmoid-colon; in one at the junction of recto-sigmoid and in one case in the rectum, which was diagnosed clinically by digital examination and was confirmed by biopsy. Histology of all malignant cases revealed adeno-carcinoma.
It is recommended that any patient undergoing haemorrhoidectomy, prior sigmoidoscopy and or barium enema in mandatory to exclude proximal carcinoma which may be missed otherwise.

Introduction

Haemorrhoids is a very common disease. It affects more than one million Americans per year[1]. It has been estimated that 5% of population is suffering from Haemorrhoids[2] and at least 50 percent people over the age of 50 years have some degree of haemorrhoid formation[3]. The most common presentation of haemorrhoids is bleeding per rectum and this symptom is also a feature of recto-sigmoid carcinoma. However carcinoma rectum and anal canal can easily diagnosed by rectal digital or instrumental examination (Proctoscopy). Occasionally recto-sigmoid carcinoma present as haemorrhoids distally[4]. So it is important to rule out carcinoma before proceeding for surgery for haemorrhoids.

The purpose of this study was to find out incidence of proximal recto-sigmoid carcinoma in cases clinically diagnosed as haemorrhoids.

Patients and Methods

92 patients suffering from haemorrhoids were included in the study. After the history and examination proctoscopy was done in every case. Before proceeding to haemorroidectomy sigmoidoscopy was performed. Out of 92 cases 68 were males and 24 were females ranging from 18 years to 82 years of age.

Results

Out of 92 suffering from haemorrhoids 5 cases were also suffering from proximal carcinoma either in rectum or sigmoid colon. Out of these 5 cases 3 were males and two were females. Out of total 5 cases four were above the age of 40 while one was under forty (37 years). In three cases the carcinoma was in the sigmoid colon one at the junction of rectosigmoid and one in the rectum. One case was clinically diagnosed just by digital examination and was confirmed by taking biopsy through the proctoscop. However all remaining cases were diagnosed by sigmoidoscopic examination and biopsy. Histology of all malignant cases revealed Adeno Carcinoma.

Discussion

Recto-sigmoid carcinoma is one of the common malignancy[5]. Incidence viz it is second to carcinoma lung in males and carcinoma breast in females[5]. Haemorrhoids associated with proximal carcinoma in the lower part of large gut is a well known entity[4]. The problem arises when a patient is diagnosed as suffering from haemorrhoids and haemorrhoidectomy is done without excluding pro-ximal carcinoma either by sigmoidoscopy and or barium enema. Although carcinoma of anal

canal and rectum can be diagnosed either by digital rectal examination or by proctoscopy. However carcinoma sigmoid colon can easily be missed without sigmoidoscopic examination or barium enema. Missing a proximal carcinoma and doing haemorrhoidectomy distally is absolutely not justified. In the present study 5 cases out of 92 (5.4%) cases were suffering from proximal carcinoma along with distal haemorrhoids. In 4 cases the car-cinoma was either in the sigmoid colon or at the rectosigmoid junction and it could be easily missed if haemorrhoidectomy in proceeded without prior sigmoidoscopy or barium enema.

It is recommended that any patient undergoing haemorrhoidectomy it should be mandatory to do prior sigmoidoscopy and or barium enema to exclude proximal carcinoma.

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ISSUES IN THE PUBLIC SECTOR PRIMARY HEALTH CARE SYSTEM IN PAKISTAN

EHSANULLAH TARIN, AFTAB RANA

The State of PHC Functions and Logistics In PHC Facilities In District, Multan

Summary

A qualitative study conducted in district Multan revealed an array of issues. The developments in the public sector health care system have been in-coherent. Different components did not keep pace with each other and the introduction of vertical programmes and lack of collaboration with allied government departments has complicated the situation. This has led the health system in a complete dis-array requiring a radical re-structuring.

Background

In the public sector health care in Pakistan, the organisational structure has grown tall but authority continues to remain centralised. This has resulted in the long chain of command and often delays in decision making. The attitude of employees in the public sector organisations is often apathetic and indifferent towards patients and other beneficiaries. The performance by the individual units in the district health system is dismal. No indicator or standard points to the condition, which may be a source of satisfaction for the managers in the health department[2]. The absenteeism of staff from their place of duty is rampant and the state of logistics is rather disgusting[2].

Given such a destitute level of efficiency, grievous state of logistics and poor staff attendance in the PHC, a serious picture of deficiencies tend to emerge in the district health system. These attributes, however, are manifestations; the factors that have contributed to these are numerous and their identification is considered as contingent upon an in-depth study. This was launched in the rural areas of district Multan of the Punjab province.

Material and Methods

Study Area

Multan is an agrarian district in the southern Punjab province of Pakistan. With its census population of 3,083,000 dwelling on 3721 square kilometers, it is subdivided into three tehsils or sub-districts. The rural Multan has 12 markaz, 72 union councils and 515 villages. The urban segment was excluded from study since mainly the Local Government or certain other allied departments either solely or partially provide the health care. Moreover, the secondary and tertiary care facilities are concentrated in these areas and the current study was focussed at the primary health care.

District Health Care Administration

The district health administration, in vogue in district Multan, depicts a picture of dichotomy. The Medical Superintendents of the Civil (now upgraded to District Headquarter Hospital) and Tehsil Headquarter Hospitals report to the Divisional Director Health Services at the Division. In parallel, the District Health Officer who together with a District Supervisory Team manages the remaining health system especially in the rural district also reports directly to him.

The District Supervisory Team comprising of a District Superintendent Vaccination (DSV); a District Sanitary Inspector (DSI); a CDC Officer (CDCO); a District Inspector Health Centres (DIHC); a District Drug Inspector; and an Entomologist (AE). In addition, at each constituent Tehsil Headquarters there is a Deputy District Health Officer (DDHO).

The Deputy District Health Officer (DDHO) at tehsil is supported by a Tehsil Sanitary Inspector (TSI); a Tehsil Superintendent Vaccination (TSV); an Inspector Vaccination; and a CDC Ins-

pector (CDCI). This tier of supervision supports the DHO in the supervision of Primary Health Care in their respective tehsils.

District Health Care Delivery Network

This comprises of a chain of health facilities, which include one Civil (DHQ Hospital), two THQ Hospital, eight Rural Health Centres (RHC); sixty eight Basic Health Units (BHU); five Maternal and Child Health Care Centres (MCH); fifteen Sub Health Centres (SHC); two Dispensaries; and sixty eight Out-reach Teams each having on it a Vaccinator; a CDC Supervisor; and a Sanitary Inspector. In addition there are about 1200 Lady Health Workers each one of these having established a health house provide family planning and primary health care services to the people at their doorsteps.

There are also a number of special vertical programmes managed by the individual managers who work under the DHO. They are: the District Co-ordinator for Prime Minister's Programme for Family Planning and Primary Health Care; District Co-ordinator for Health Management Information System (HMIS); Programme Director for District Health Development Centre; and Co-ordinator for the World Health Organisation supported Basic Minimum Needs (BMN) Programme[3].

Methodology

Since the purpose of study was to in-depth investigate the underlying causes of the in-efficiencies and in-discipline exhibited as under-utilisation and staff absenteeism, qualitative methods for research was used. These are flexible and iterative; and provide the researcher every opportunity to retrieve information from the respondent. The focus group discussion, semi-structured interviews and visual cards were important methods, which were employed in this enquiry.

A focus group discussion (FGD) using a checklist (Appendix-A) was organised with different health care providers (Appendix-B) in order to identify the underlying idiosyncrasies in the health services delivery outlets. Similarly, another FGD was arranged with different level supervisors (Appendix-C) using another checklist (Appendix-D). The respondent's views were obtained regarding the existing conditions, the underlying causes and the possible interventions to address issues in the district health system that it is responsive to the needs of communities. Both these FGDs were combined with visual cards, semi-structured interviews [interview guide at Appendix-E] and participatory observations.

Results

The textual data so generated was carefully minuted and later corroborated with the observations made during discussions and the circumstantial evidences provided by the key informants during interviews. A plethora of factors were revealed as the underlying idiosyncrasies to in-efficiencies and in-discipline in the public sector health care. These are summarised as below:

1. Lack of inter-sectoral co-ordination;

Health is a multifaceted issue and many answers to ill health lie outside the organisation of health care delivery system. However, the interaction between different public sector departments is limited to a District Development Committee. The Deputy Commissioner heads this with all the district departmental heads as members and the Assistant Director (LG & RD) acts its Secretary.

The markaz a revenue unit consisting of 6-8 union councils was created in mid-seventies as a tier for inter-sectoral collaboration. All the Chairpersons of the catchment union councils constitute the Markaz Council. In its meeting, which happened once every two months, it was mandatory for all the departmental heads at tehsil level to participate and provide progress reports regarding their departments. However, due inter-alia to the continuing suspension of local bodies, this practice has finished and has not been revived in the new local government legislation.

2. Low level of partici pation by the communities;

The environment in the public sector is such that the involvement of community in decision making at any level is taken as threat. Interventions are visualised and then implemented without any consultation with the potential beneficiaries. This has resulted in establishing a huge infrastructure, which remains highly under-utilised. In one case only 9 patients visited a BHU in a day where on average a staff of 9 including a medical officer and a lady health visitor is posted.

[3]This programme initiated in Union Council 6-MR is still in its infancy and has not yet taken off.

Often people don't even acknowledge the existence of health centre, albeit, situated nearby.

3. Lack of public private partnership in dealing with health issues;

The public sector catres to the curative and rehabilitative needs of about 20% of the population. The private sector has increasingly taken over to serve the remaining segment in the community. However, there is no forum yet established which could link and integrate the health care efforts of these two providers. The Pakistan Medical and Dental Council is a body to register and to act as watchdog over the practice of individual clinician. The Pakistan Medical Association is in infancy and is involved more in professional politics than its promotion. A Society for Family Physicians is though working to bring together the private and public sector physicians, but the results are far fetched yet.

4. Centralisation of financial and administrative powers;

The financial, administrative and legal authority is either centralised in the higher levels of the health system hierarchy or the incumbents have usurped the powers of the lower tiers. The budgetary provisions under different heads of expenditure are often not appropriate. In one instance allocation for "transportation of goods" was hopelessly meagre amount of Rs. 200/. For such deficiencies to overcome re-appropriation of funds from one head to the other by the competent authority i.e. the DHS is essential. Added to this are the cumbersome procedure for purchase. Often it takes long periods to effect any procurement. Finally where financial powers have recently been delegated, the administrative and legal powers still remain concentrated.

5. Structures too big to be dealt with by managers who have low level management skills;

The public sector health care delivery network has overtime become one of the largest government organisations with an extensive infrastructure. Whereas the rules governing the people, resources and other operations remain old and perhaps outdated, there has also been a little human resource development, which was required to manage the giant structure that has come in place. People at the helm of affairs usually lack the skills essential to effectively operate the system.

6. Lack of participation by the lower levels in the planning process

Lack of participation in decision making is not limited to the end-users. This transcends to the lower levels in the health systems hierarchy as well. The juniors are not taken into confidence while making any decision. They are considered as subordinates only to obey and work "as directed" and not the partners in planning any intervention. If they happen to make some observation that is usually taken as arrogance. The communication in the organisation, therefore, runs often in one direction top to bottom and the lower tiers seldom receiving any feedback.

7. The health facilities are often away from the main population centres

The government on the pretext to ensure community participation established health facilities at locations where the community provided free of cost land. This was certainly a mal-understanding and misconception. The land has often been provided by a landholder that in most cases had his vested interests for making such contribution. Maybe the situation would not have been so adverse if the District Health Officer had himself taken pain and persuaded people to provide more suitable land for health facilities. He, in many cases, left it to his Head Clerk who perhaps had limited capacity for undertaking such assignments.

8. Hard to access facilities

The health facilities, in many cases, are located at such places where there are no appropriate access roads and in certain places, these don't exist either. By virtue of this, the health facility remains isolated and there comes to visit neither the routine working staff nor the supervisory staff. Additionally, such obstacles to the physical access renders the facility as under-utilised since patients don't visit this either.

9. Non-local staff

Since, the facilities are often situated away from the main roads, there is seldom a transport available adding to the physical in-accessibility both for the staff and the communities. Further, because the rural areas have not been able to keep pace with urban population in terms of literacy, the doctors and other staff is from cities, who commutes daily to reach the facilities. Even if

there were an occasional one from the village, he would also shift to city, as few civic and educational facilities are available around health centre.

10. Non-resident staff

Despite, the availability of residences constructed for all the facility staff, they don't reside and are hence not available on the premises round the clock for service to the communities. Remaining un-occupied, these buildings are not provided preventive maintenance, which is readily managed by the occupants. Their starts a positive vicious circle of un-abated wear and tear and soon these are dilapidated giving picture of some ruins. This condition whereas becomes the plight of staff, serves also an argument for their not staying in the health centre's premises.

11. Consumables are short supplied

The medicine and other consumables are often short supplied. For various common ailments, these are either not available altogether or any one item from the required combination is missing. Since, there prevails also the irrational prescription in the PHC, this adds to the stock-out days for several medicinal items. A situation is thus created whereby the patient remains unsatisfied and also the prescriber feeling disgruntled and useless. The disappointment rises further, when there is poor or no positive feedback from the district health office upon the reports submitted informally or through the routine Health Management Information System.

12. Ill maintained gadgets and equipment

The gadgets and equipment essential for the clinical operation of health facilities is either missing or is not functional. Whether cause or effect, these items, which were provided, were either not used appropriately and went rotten or the consumables necessary for their efficient running were not available. Also, the authorities competent in the district health system did not arrange the required maintenance whether preventive or active.

13. Poor patient referral system

The patient referral system is either poor or does not exist al-together. Despite there is a column in the OPD register, the referred patient is neither entered, nor there is any feedback received by the referring facility from the referral facility. The referral facility also pays little heed to such patients. Added to this, no referral path has been defined and told to the facilities. The commonly stated path[4] may be invalid in many situations, especially when several facilities including those assigned for referral are non-functional. This is precisely the case, on ground. On the whole, there is little concept of referral and the recent efforts by the Asian Development Bank funded, Health Care Development Project, albeit laudable, will take time to take roots.

14. Poor outreach services

The primary health care is primarily the story of the outreach services rendered to the communities at their doorsteps. The static facility based services are, essentially, aimed to only substantiate these. However, unfortunately these services have gone very weak over passage of time due to factors, inter-alia, all those counted hereto with varying intensity.

These outreach services viz. Vaccination, Communicable Disease Control, Sanitation, and Prime Minister's Programme for Family Planning and Primary Health Care are run as vertical with no integration with static PHC structure. This arrangement has led to the higher salary cost leaving little resources for non-salary incremental expenditure. With increasing emphasis on eradication of polio through National Immunisation Days, almost all outreach work force is often diverted from their original duties and is engaged in this mass immunisation campaign.

15. Human resource mismanagement

The transfers, on one ground or the other, are rampant. Whereas this leads to insecurity amongst staff and adds to the instability in the system, at the same time the services to the communities are also interrupted. The economic drain caused to the district health system due to such staff movements is a further addition. The accountability on the premise for in-efficiency and in-discipline is seldom practised in the district health administration. Nuisance, whether political or professional has become the order of the day. Often the seniors are not immune to such interference even by their subordinates.

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[4]from the LHW to BHU to RHC and then to THQ in the relevant revenue area

16. Interference by local feudal

Local feudal who had donated land for the construction of health facility is considered interfering in the working of the facility. Maybe this is an expression of their concern over the state of affairs, certainly the link between facility staff and communities is weak. In a greater intensity such interruption is termed as political, when local MPA or suchlike character is involved. Whatsoever precipitating factor, this is due to the imbalances amongst the constituent subsystems viz. communities or end-users; providers and the governance operating in the district health system.

17. Exploitation of juniors by the seniors in the hierarchy

The staffs at health facilities is continuously blackmailed and exploited at all levels in the system - be it at the district by the district health office or at the provincial level. This exploitation, in their view, is wide ranging. They are forced for the professional misconduct, when e.g. they prescribe irrationally. No training on rational prescription was imparted and the elements essential for this important faculty are seldom in place in health facilities. This extends to management issues as well neither an inception foreword is given nor any relevant on the job training in facility or even a refresher on clinical management is imparted.

Administrative in-efficiencies of the higher levels in the hierarchy are passed on to the lower tiers. The district health office, which must ensure the availability of medicine and other consumables at health facilities, seldom shows any response to the reports about stock outs. The under-utilisation even though consequent upon such administrative deficiencies, is un-justifiably reflected as under-performance by the health facilities.

The general economic situation in the country has strained the common employees to behave like slaves in the department and despite being recklessly low paid, they are forced to accept and continue in this precarious position. Compared with market, their remuneration hardly match to whatever services they perform.

Discussion and Conclusion

A district health care system has three component sub-systems viz. The communities or end-users; the services offered at the outlets and the health care administration which regulates and organises the process of smooth delivery of services. For any system to run effectively, all of its constituent sub-systems should work in complete harmony and with equal efficiency and momentum. The health care system is no exception. Malfunction by any part is likely to ultimately affect the entire system.

In the current study the impression of communities about health services has not been obtained directly and adequately presented. It had been relied upon the service providers at facilities who are in frontline and exposed to the end-users. The district health administration has also recognised the role of communities and has acknowledged that hitherto no serious effort was made to involve communities.

Attributes that have marred the health system are numerous and are prevalent at every level of management and health care delivery network. The policy makers whether politicians or bureaucrats often took a skewed view of community participation. The difference between individual and collective contribution was hardly understood. The mechanisms for inter-sectoral collaboration were not installed and those in vogue were not allowed to operate. Similarly different uni-purpose vertical programmes and projects were introduced without giving any heed to their integration with the mainstream health care delivery network.

The health care system with passage of time expanded both vertically as well as horizontally. Whereas the new tiers of health care delivery were added at the same time the constituent units also grew in number. However the power structure for regulating the financial, administrative and legal operations remained the same. The centre, as a result, has become too much loaded with powers and responsibilities with little concomitant development of skills. The periphery is equally heavy in structure and functions but few accompanying authorities. Thus expectations of end-users remain far short of satisfaction.

Appendix-A

Guideline for Focus Group Discussion (Providers)

1. "Are you satisfied with the current performance level of health care delivery outlets (facilities) in the district"?

   The answer, whether yes or no, the individual member in the group would write (three) reasons to defend it. This may take the shape of a list of strengths and weaknesses (or

the facilitative or hindering factors) at the health facilities that underlie malfunctioning / skewed performance of health care delivery network. These will then be prioritised and the participants will further explore using "But Why? Method",

2. "How to address the most important weaknesses and exploit the prioritised strengths in the health care delivery network to raise the performance level"?

The discussion would be generated at this point and guided to obtain the group's views on the role of the district health administration, the health outlet staff, and the served communities.

Appendix-B

Participants of Focus Group Discussion (Providers)

1. Dr. Ghulam Shabbir Qaisrani, Senior Medical Officer, Rural Health Centre, Matotli
2. Dr. Zafar Iqbal Alvi, District Co-ordinator, Prime Minister's Programme, Multan
3. Dr. Rana Aftab, MRE Officer, District Health Development Centre, Multan
4. Dr. Shahid Mahmood Bokhari, Medical Officer, School Health Services, Multan
5. Dr. Muhammad Siddique, Medical Officer, Basic Health Unit, 18-MR
6. Dr. Muhammad Zubair, Medical Officer, BHU, Kotheywala
7. Dr. Muhammad Zubair, Medical Officer, BHU, Muzaffarabad
8. Dr. Muhammad Najeeb, Medical Officer, BHU, 5-Faiz
9. Dr. Fiaz Mahmud, Medical Officer, BHU, Qasim Bela
10. Ms. Najma, Lady Health Visitor, BHU, 18-MR
11. Mrs. Zafar, LHV, BHU, Kotheywala
12. Ms. Riffat, LHV, BHU, Muzaffarabad
13. Ms. Farzana, LHV, BHU, 5-Faiz
14. Ms. Fauzia, Supervisor, PMP
15. Ms. Saira Naqvi, Supervisor, PMP
16. Ms. Atiyya, LHV Trainer, DHDC
17. Ms. Ishrat Naheed, LHW, PMP

Appendix-C

Participants of Focus Group Discussion (Managers)

1. Mr. Zubair Farooq Khan, Chairman District Health Authority, Multan
2. Mr. Azhar Baloch, Member, DHA
3. Dr. Iftikhar Hussain Qureshi, District Health Officer and Exec, Secretary, DHA
4. Dr. Mirza Mohammad Salim, Programme Director, DHDC
5. Dr. Mohsin, Deputy District Health Officer, Shujabad
6. Dr. Saghir Ahmad Khan, Ex-DDHO, Shujabad
7. Dr. Rana Aftab Monitoring Reasearch Evaluation Officer, DHDC
8. Dr. Zafar Iqbal Alvi, DC, PMP
9. Dr. Shahid Mahmood Bokhari, MO, School Health
10. Mr. Malik Mohammad Shafi, District Superintendent Vaccination
11. Mr. Qazi Mohammad Farooq, Communicable Disease Control Officer
12. Mr. Mohammad Azam Chishti, District Sanitary Inspector Senior Medical Officer, RHC, Matotli

Appendix-D

Guideline for Focus Group Discussion (Managers)

1. What is the perception of participants about district health system? This is essential in order to bring every participant at the same wavelength of understanding. The moderator will facilitate towards this.
2. How would the performance of district health system, as of today, be rated?
3. What are the underlying problems that have led to a poor state of affairs in the district health system? In this regard what is the contribution of:

3.1 Bad logistic and budgetary planning;

3.2 Poor human resource development;

3.3 Poor accountability system;

3.4 Lack of support and instead authoritative supervision;

3.5 Verticality and lack of integration between different programmes;

3.6 Centralisation in decision making; and

3.7 No mechanisms whereby the communities i.e. people are involved.

4. Whether "absenteeism of staff", "low utilisation of facilities" is the causes or effect of a failed health administration? And how to address these issues?

5. What should be done under the prevailing circumstances to avert the failing district health system to further crumble?

Appendix-E

Interview Guide Qualitative Survey

The following questions were used to initiate discussion about any office / section with the senior-most incumbent as respondent while others could also join.

1. Introduction to the office / section;
2. Functions / job package specified for the office / section;
3. To what extent the office / section has been fulfilling its assigned obligations;
4. What are the main constraints underlying the proper performance;
5. What are the strengths and weaknesses in offices / sections for achieving objectives; and
6. What has been and is being suggested for the improvement.

ACQUIRED IMMUNODEFICIENCY SYNDROME (AIDS) AWARENESS AMONG STUDENTS OF DEGREE COLLEGES FOR BOYS AT ISLAMABAD

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Summary

A cross sectional descriptive study was conducted to determine the level of AIDS awareness among male students of degree colleges at Islamabad, 500 students with average age of 17 years from 1st, 2nd and 4th year were interviewed. 31.6% of students belong to uneducated mothers, while 95.2% student's fathers were literate. Majority, 236 (47.2%) of students belong to income per month group of Rs. 5000 to 10,000 and lived in urban areas, 333 (66.6%). 90.2% were aware of germs as cause of AIDS. More than 75% correctly know the sexual mode of transmission of disease including prostitution and more than 80% acknowledge the transmission through syringes, needles and blood. Similarly 70% of students correctly know that ordinary casual contact does not cause spread of disease, however about 50% do not appreciate the risk of sharing razors, toothbrushes, etc. 54% of students stated that preventive measures for AIDS are available. 80% of students pointed out TV as their best source of information about AIDS.

Introduction

This is one of the most prevalent calamities of the world. It has already involved the most developed / industrialized countries in the world and now the AIDS cases have been reported in almost all the developing countries. According to the latest figures determined by World Health Organi-zation (WHO) throughout the world, the magni-tude of the AIDS cases has remarkably increased by the 60%. At present there are about 33.4 million children and adults suffering from AIDS / HIV. Almost 1.1 million of children are living with AIDS / HIV. Pakistan was almost free of AIDS a few years ago but now a gradual increase have been observed in HIV positive / AIDS cases. According to bulletin of National AIDS prog-ramme, till December 1998 confirmed HIV posi-tive cases came out to be cumulative total of 1364, while established cumulative cases of AIDS in Pakistan is believed to anywhere between 20,000 to 50,000. Despite all the modern research facilities, there is still no hope for any effective vaccine or chemotherapy to be invented. The only remedy available at present to combat the disease is to adopt preventive measures including the dissemi-nation of knowledge about the cause, mode of transmission, diagnosis, management and methods of intervention[1]. Although no age group is immune to this disease, the young generation is particularly at risk, because an unhealthful behaviour can lead to gave consequences[2]. Various techniques of health education about AIDS are being adopted throughout the country but these are not imparting the full knowledge regarding the AIDS, care, mode of transmission and preventive measures etc[3]. Therefore this study was conducted to assess the knowledge about AIDS in young people and to construct a valid health education intervention.

Methods and Materials

A. Study Universe

This study was carried out in the Capital city of Pakistan, Islamabad. All the three concerned colleges are situated in the centre of city

Islamabad, and mostly students belong to middle to high socioeconomic class.

B. Study Design

It is a cross sectional descriptive study to investigate the current state of knowledge about causation / transmission and prevention about HIV / AIDS among male college students at Islamabad. All the students in boys degree colleges in government sector at Islamabad were considered in study population. Because of the non availability of the 3rd year students in the college due to their university examination and secondly the new admissions of first year classes were being carried out so it was difficult to get a proper sampling frame. Hence the non-probability, convenience sampling technique was adapted. The data was collected by with help of three trained hired personnels, one for each college, when the colleges were in session.

C. Data Management

A Data entry programme was developed on EPI-INFO version 6.0, a computer programme and responses were entered in the computer. The entered data was cleaned and final analysis was performed with the help of the computer programmer.

Results

A. Background Information

A total of 500 students were interviewed whose majority 257 (51.4%) belonged to age group 17-19. Students from Ist year were 192 (38.4%), from 2nd year 159 (31.8%) and 4th year 149 (29.8%) from all the three colleges. Mothers of 342 (68.4%) students were educated and similarly fathers of 476 students (95.2%) were educated.

Majority of students 453 (90.96%) have mothers as house wives. 233 students (47.3%) have father in Govt. service while 161 (32.7%) belong to business and 98 (19.9%) from private service 236 students (47.2%) belong to family with income from Rs. 5000 to 10,000 / month. Majority of students 333 (66.6%) live in urban area, while 92 (18.4%) live in posh area and 75 (15.0%) live in village, 337 (67.4%) students like to watch TV / Dish / Internet while 307 students (61.4%) read newspapers, and 222 students (44.4%) read magazines (Table 1).

Table 1 *Socio Demographic Profile of Respo- dents (n = 500).*

Socio Demographic Variables	Numbers	Percenta
Age of students (Years)		
14-16	158	31.6
17-19	257	51.4
20-22	84	16.8
Class years		
First year	192	38.4
Second year	159	31.8
Fourth year	149	29.8
Mother's Education		
Illiterate	158	31.6
Literate	342	68.4
Father's Education		
Illiterate	24	04.8
Literate	476	95.2
Family Income		
< 5000	101	20.2
5000 to 10,000	236	47.2
> 10,000	163	32.6

B. Knowledge About AIDS

Overwhelming majority of students 479 (95.8%) have heard about AIDS problem. 451 students (90.2%) correctly narrated that cause of AIDS are germs. Regarding transmission of AIDS, 307 (61.4%) students blamed kissing on cheeks or lips as mode of transmission. While 419 (83.8%) and 374 (74.8%) students claimed sexual inter course, Homosexual, Oral sex, Anal sex, as routes of transmission. Similarly 407 (81.4%) and 277 (54.4%) students made multiple sex partners and sharing of razors responsible for transmission respectively. 387 (77.4%) students claimed prostitution as a cause of AIDS (Table 2). Regarding availability of laboratory diagnosis of AIDS total of 329 students (65.8%) correctly answered. 361 students (72.2%) correctly answered that no complete cure or treatment for AIDS.

Table 2 *Students Knowledge About Transmission of AIDS (n = 500).*

Modes of Transmission	Numbers of Students Answered Correctly	Percentage
By Germs	451	90.2
By Kissing on Cheeks or lips	307	61.4
By Sexual Intercourse, Homosexual	419	83.8
By Oral Sex, Anal Sex	374	74.8
By Multiple Sex Partners	407	81.4
By Sharing of Razors etc.	277	55.4
By Prostitutes	387	77.4

C. Preventive Measures of AIDS

Students came up multiple statements for preventive measures. Among these most commonly stated are use of disposable needle and syringes and avoid sharing of razors and toothbrushes, by 101 students (37.5%) and restriction to the spouse by 55 students (20.4%). 36 students (13.4%) suggested use of condoms in sexual acts (Table 3).

Table 3 *Different Preventive Measures Stated by Respondents (n = 500).*

Preventive Measures	Numbers	Percentage
Use of Disposable Syringes / Sharing of Razors	101	37.5
Restriction to Spouse	55	20.4
Use of Condoms	36	13.4

D. Source of Information About AIDS

The majority of students 440. (88.0%) pointed out T. V. as their major source of infor-mation about AIDS. While 280 students (56.0%) stated newspapers as source and 244 students (48.85%) got information's from magazines and 216 (43.2%) from their friends about AIDS. (Table 4).

Table 4 *Source Information About AIDS Stated by Respondents (n = 500).*

Source of Information	Numbers	Percentage
Television	440	88.0
Newspaper	280	56.0
Magazines	244	48.8
Friends	216	43.2

Discussion

The estimated stress of AIDS is on increase all over the world, especially the situation in south east Asia is becoming grave. Our country is no exception. Once the epidemic spreads out in general population from high risk groups, exponential effect of this dreadful disease is unimaginative. Apart from the 10% mortality, the effect on health care system in terms of finance and man power shall be a great burden on country resources[4]. The only way to combat this disease is best effort to change the human behavior on the lines of behavior vaccination and people must be educated that there is no cure for the disease but their life style can prevent them[5]. Knowledge about causation, mode of transmission, diagnosis, management prevention and the role of mass media can be considered as the key of our success in fight against AIDS / HIV infection. This study provides a descriptive assessment of knowledge and attitudes of young male college students.

As far as knowledge regarding causation of AIDS is concerned 90.2% students blamed germs as the cause of AIDS and while remaining 9.8% students claimed incorrectly insects, worms, dirty water and infected food as the cause of this fatal disease and these misconceptions need to be corrected by proper knowledge of the disease. Regarding the knowledge about modes of transmission of disease more than 75% students, answered correctly about sexual transmission of disease between sexual partners and by contact with prostitutes. This is very encouraging to know that at least they know this very important mode of transmission, which is regarded as the most prevalent route of transmission of AIDS. Although results are somewhat less than another study conducted in Karachi among Medical students, in which the sexual mode of transmission was declared by 97% students, but keeping in view these ordinary students, studying at various preliminary

levels, their knowledge is highly remarkable[3]. Although a large number of students indicated a high level of knowledge about various modes of transmission, yet many respondents also reported misconceptions about several unverified and non viable routes of HIV / AIDS transmission. So more than 50% of the students were of view that AIDS is not transmitted by sharing of razors / tooth brushes, etc. As we know from our uptodate knowledge of AIDS that these are important routes of transmission of disease, these misconcep-tions strongly need correction by proper health education campaign for the students. 54% of stu-dents stated about existence of preventive measures. Most of them mentioned safe sex, res-triction to spouse, screening of blood and use of disposable syringes as the prime preventive measures. Although there are so many preventive measures which can be adopted in this respect so there is a dire need of strengthen this component by proper health education intervention. Role of mass media is a corner stone regarding imparting the knowledge of AIDS now a days. About 88% of students got information / knowledge from T.V. media, while more than 50% received information from other sources like newspapers, Magazines etc. Thus the role of mass media is highly appreci-able in this regard and needs further enhance-ment, to impart more knowledge about AIDS and to correct their misconceptions regarding AIDS.

Following recommendations can be made

- There should be special AIDS / sex education subject included in the syllabi.
- Students should be given thorough knowledge of dangers in involving injecting drug abuse and liberal sex behaviours.
- Young generation should be told to have safe sex only with people they know to be free from HIV infection and limit to their spouse only.
- Special programmes on AIDS, and drama dialogues should be shown on T.V. and other electronic media.
- Regular advertisement from health officials in newspapers, and articles on AIDS awareness and prevention on mass media are mandatory.
- Special literature on AIDS regarding awareness and prevention strategies should be provided in shape of brochures, audio / video cassettes to the college students.

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SPECTROPHOTOMETRIC DETERMINATION OF NICOTINE IN DIFFERENT VARIETIES OF TOBACCO

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Summary

The work reported in this thesis was carried out to determine the percentage of nicotine in different varieties of tobacco by spectrophotometric technique using Alizarin as colour producing reagent. It was found that nicotine reacts with Alizarin to give pink colour, after heating at 90-100°C for 60 seconds. The resulting colour shows maximum absorbance at 520-530 mm and 1μg/ml as visual limit of identification. The reaction is specific for nicotine and it provides a base for a new spectrophotometric method for the determination of nicotine from various tobacco products (Cigarettes, Cigars, and crude tobacco etc.) in minute quantities. Beer's Law is valid between the concentration range of 0.01 - 1mg / 10 ml. The colour is stable formore than 24 hours. Maximum amounts of various Organic Compounds not interfering during the determination of nicotine are also reported. Ten samples of tobacco were analyzed and the results showed that all samples contained high amount of nicotine, which exceeds the fatal dose of nicotine i.e., 40-60 mg for an adult. The highest amount of nicotine was found in Rustica-9 i.e., 3.10 g / 100 g and the lowest amount of nicotine was found in Speight G-108 i.e., 1.69 g / 100 g.

Introduction

Of the numerous alkaloids that have been isolated from the tobacco leaf, e.g., Nicotine, Nicotinine, Nicotimine (anabasine) nornicotine etc., the most important is nicotine. Nicotine is a liquid alkaloid obtained from the dried leaves of tobacco plant "Nicotiana Tabacum". It is colourless to pale yellow, very hygroscopic, oily liquid, which turns brown on exposure to air, develops tobacco like odour. It has burning taste and an odour similar to that of pyridine. It is highly alkaline liquid (pKa = 8.5). It possesss two basic nitrogens and behaves as a ditertiary base, unites with two molecules of monobasic acid or alkyle iodide. The weaker basic nitrogen is in the pyridine residue. Numerous salts are known among which are the hydrochloride, salicylate and tartrate. The tartrate is said to be superior to the other due to its greater solubility and stability[1].

Nicotine owe much of its pharmacological activity to its action at autonomic ganglia[2]. There are also many pharmacological actions of nicotine. It effects peripheral nervous system, central nervous system, cardio vascular nervous system, gastro intestinal tract and exocrine gland[3].

Nicotine is a highly toxic substance and in acute poisoning death may occur within a few minutes due to its respiratory failure. The fatal dose of nicotine for an adult is from 40-60 mg. Less severe poisoning causes nausea, salivation abdominal pain, vomiting, diarrhea, dizziness, mental confusion, disturbed hearing and vision etc[4]. Treatment of these toxic effects of nicotine is also possible[5].

Nicotine has no therapeutic use due to its toxicity, but is of considerable pharmacological interest. Nicotine is mainly used as a horticultural insecticide either as vapour or as a spray. It has been used as a contact insecticide for sucking insects[6]. In recent years nicotine has been recommended for hypodermic injections, tetanus, strychnine poisoning and salicylate as a remedy for certain skin affections. Nicotine sulphate has also been recommended as a veterinary anthelimintic. Nicotine gum is available in several countries, containing nicotine, which had been used as an aid, for the smokers who had the highest degree of dependence on nicotine and want to stop smoking[7].

There are many types of tobacco found in all parts of the world. Two types found in Pakistan are *Nicotiana Rustica* and *Nicotiana Tabacum*. *Nicotiana Rustica* is basically a Turkish tobacco but is grown in all parts of the globe. Its different varieties are also grown in Pakistan. Some of its important varieties grown in Pakistan are as under:

(i) Rustica- 9 (ii) Rustica-11
(iii) Rustica-12 (iv) Rustica-13
(v) (Rustica-14 etc.

Nicotiana Tabacum is divided into three sub-types according to the curing process:

1. Flue-Curved Virginia (FCV)
2. Dark Air Cured (DAC)
3. Burley.

As for as FCV is concerned, it has many varieties. Some of its important varieties found in Pakistan are:

(i) Speight G-108 (ii) Speight G-28
(iii) KHG-13 (iv) KHG-14
(v) KHG-15 etc.

As for as DAC is concerned, it has many varieties. Some of its important varieties found in Pakistan are:

(i) Galpao (ii) MA-2
(iii) Kango Baster (iv) Harvel De-Baisco etc.

As for as Burley is concerned, it has many varieties. Some of its important varieties found in Pakistan are:

(i) Banket-21 (ii) BY-K_1
(iii) BY-K_2 (iv) BY-K_3 etc.

In this work following ten varieties of tobacco were studied:

1. Speight G-108
2. Speight G-28
3. KHG-13
4. KHG-14
5. KHG-15
6. Rustica-9
7. Rustica-11
8. Rustica-12
9. Rustica-13
10. Rustica-14

The purpose of this work is to find out the percentage of nicotine in the above ten varieties of tobacco so that it becomes possible to separate them according to the quantity of the nicotine present in them and to conclude that which variety is most and which variety is least toxic than the others.

Experimental

Apparatus

LKB Biochrom Spectrophotometer model 4049 by NOVASPEC along with cells of Pyrex glass was used for measuring absorbance.

All the micropippets and other apparatus used during the experiments were calibrated as "A" grade.

Chemicals

Standard sample of Nicotine was obtained from **Eastman Kodak Chemicals New York.** All the chemicals used were of analytical grade.

Alizarin	B.D.H
Barbituric Acid	Beohringer
Caffine	E. Merck
Ephedrine	E. Merck
Quinine	E. Merck
Haloperidol	Serenace (Pak.)
Benzidine	Boehringer
Hyoscine	Glaxo (Pak.)
Chlorpromazine	Star (Pak.)
Fluphenazine	Saitex (Pak.)
Atropine	B.D.H

Verieties of Tobacco Used

Speight G-108, Speight G-28, KHG-13, KHG-14, KHG-15, Rustica-9, Rustica-11, Rustica-12, Rustica-13, Rustica-14.

Speight G-108, Speight G-28, KHG-13, KHG-14, KHG-15, are the varieties of Flue-Cured Virginia (FCV) which is a sub-type of *Nicotiana Tabacum* and Rustica-9, Rustica-11, Rustica-12, Rustica-13, Rustica-14 are the varieties of the type *Nicotiana Rustica.*

Reagents

All the reagents and stock solution, used during these experiments were prepared in distilled water and were of analytical grade.

1. *Alizarin Solution (0.01%)*

0.01 grams of Alizarin was dissolved in distilled water in a 100 ml measuring flask and the volume was made up to the mark.

2. *Nicotine Solution (1 mg / ml)*

100 mgs of pure *"Nicotine"* were dissolved in distilled water in a 100 ml measuring flask and the volume was made upto the mark.

3. *Stock Solutions of Various Organic Compounds for Checking Interference*

1 mg / ml solutions of various Organic compounds were prepared by dissolving 100 mg of the Organic Compound in distilled water, ethyl alcohol, methyl alcohol etc., in 100 ml measuring flasks and the volumes of the solutions were made up to the mark with above solvents in order to check the interferences of these compounds in the determination of *"Nicotine"*.

Procedures

Nicotine reacts with Alizarin to give a pink colour having pH 9.5[8]. The reaction is specific for nicotine, and this provides a base for a new spectrophotometric method, for nicotine in bulk and from different tobacco products (cigarettes, cigars, crude tobacco etc). Effects of different reagents, heating time, temperature and colour stability were studied along with the interferences of different organic compounds in the determinations of nicotine.

Procedures for the complete study of the reaction are given:

1. *Procedure for Determination of λ-Max*

The spectra obtained as a result of absorbance versus wave length for the test solution of Nicotine are given in Fig. 1 It contained nicotine 2 ml (1 mg / ml) and 1.5 ml alizarin (0.01%). Mixture was heated for 60 seconds at 90-100°C in a water bath and volume was made up to 10 ml. Absorbance was measured at different wave-lengths in the colour region (350-750 mm). RESULTS are shown in Table No. 1 A graph was plotted between absorbance versus wavelength. It showed maximum absorbance at 520-530 mm. As shown in Fig. 1.

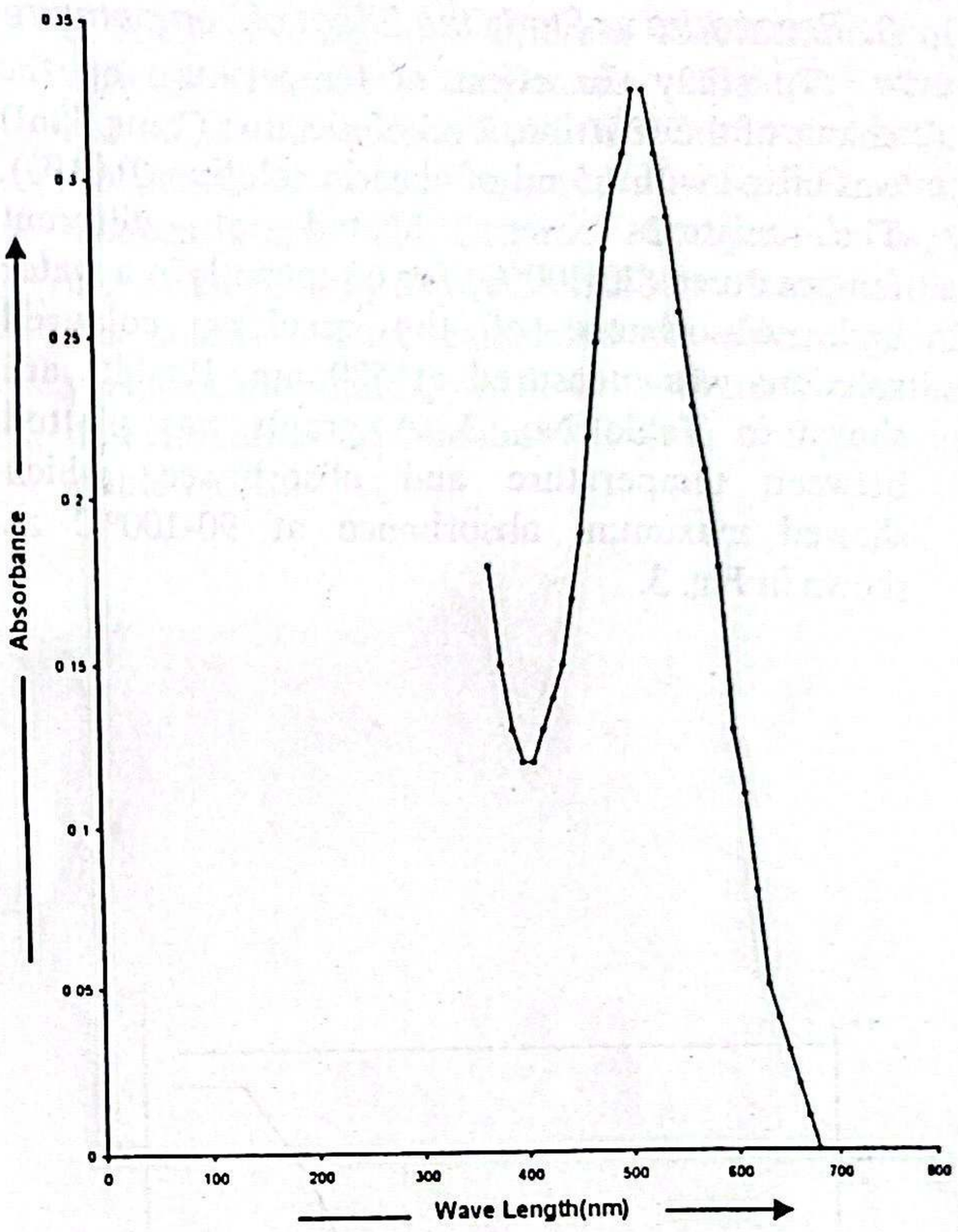


Fig. 1 Absorption Spectra of Nicotine with Alizarin.

2. *Procedure to Study the Effect of Heating Time*

To study the effect of heating time on the colour of the reaction, 2 ml of nicotine (1 mg / ml) was mixed with 1.5 ml of alizarin (0.01%). Mixtures were heated for different times (10-120 seconds) at 90-100°C in a water bath. Absorbance of the resulting coloured solutions, was measured at 520 nm. Results are given in Table No. 2 A graph was plotted between absorbance and heating time, which showed maximum absorbance at 60 seconds. After 60 seconds, there was a decrease in the absorbance as shown in Fig. 2.

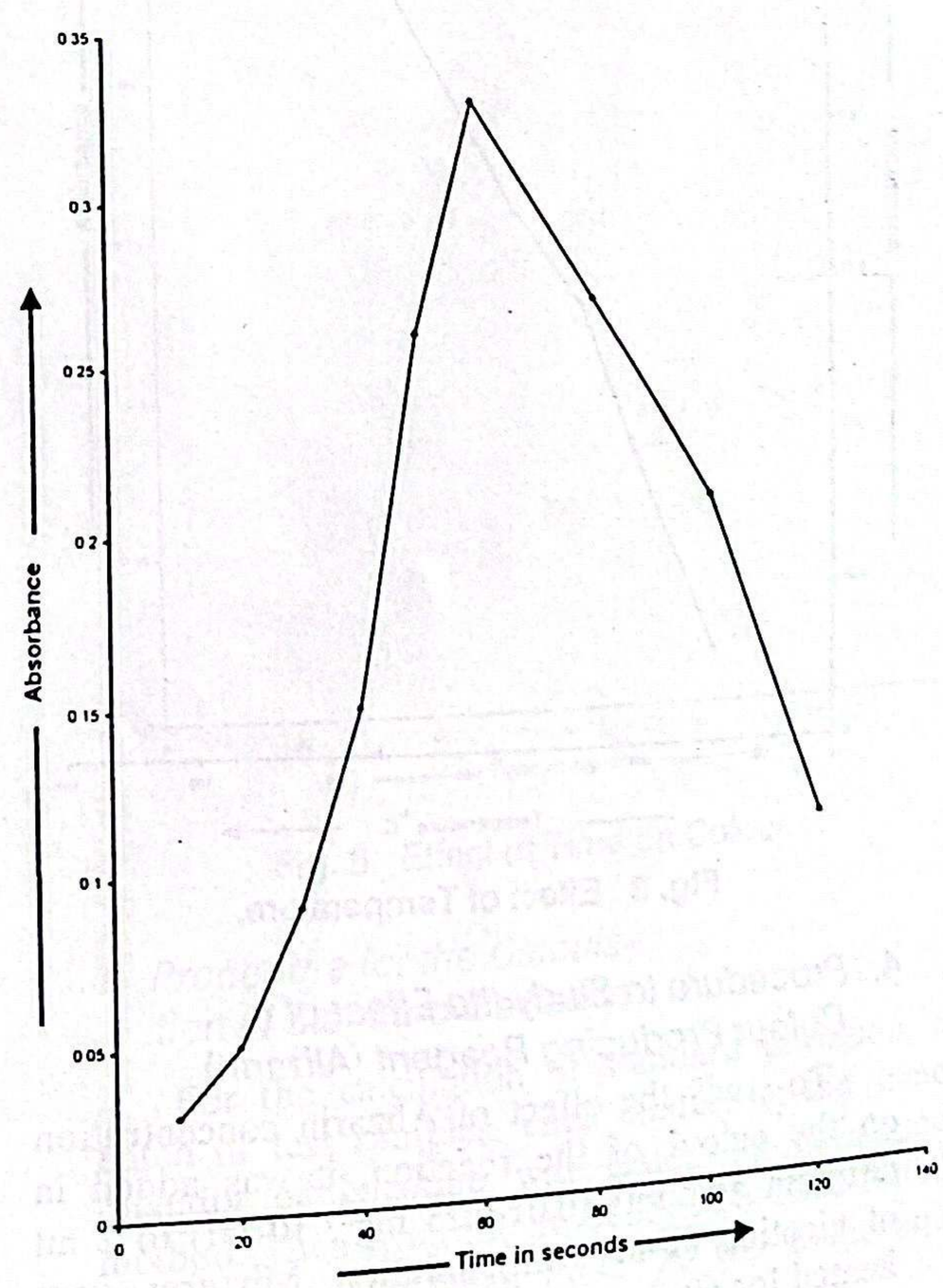


Fig. 2 Effect of Heating Time.

3. *Procedure to Study the Effect of Temperature*

To study the effect of temperature on the colour of the reaction, 2 ml of nicotine (1 mg / ml) was mixed with 1.5 ml of alizarin solution (0.01%). The mixtures were heated at different temperatures (20-100°C) for 60 seconds in a water bath. Absorbance of the resulting coloured solutions was measured at 520 nm. Results are shown in Table No. 3. A graph was plotted between temperature and absorbance, which showed maximum absorbance at 90-100°C as shown in Fig. 3.

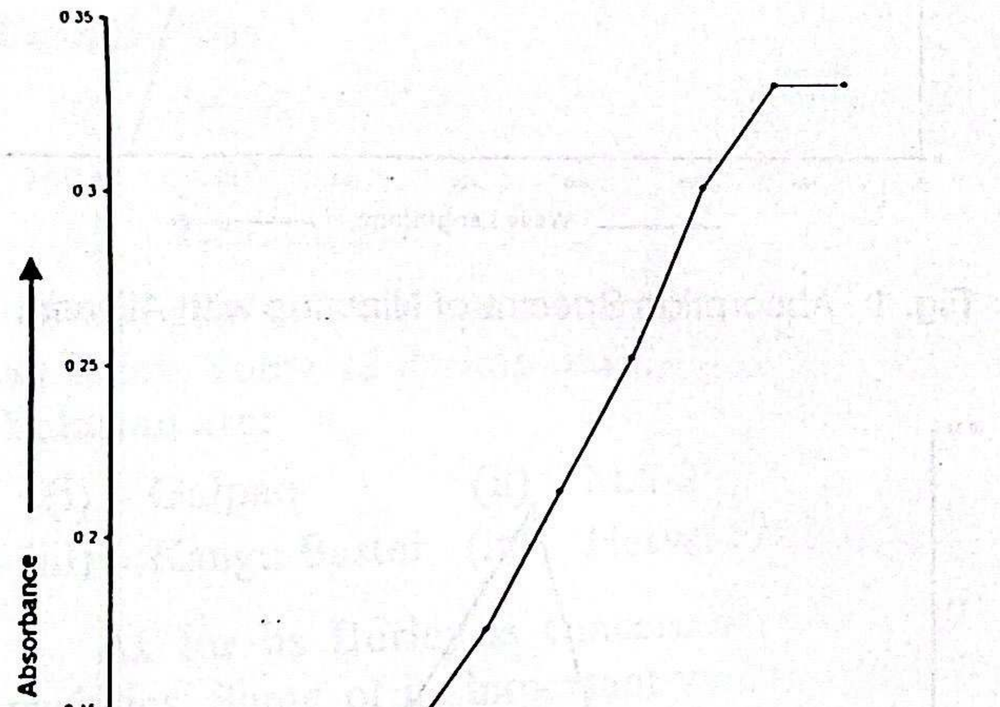


Fig. 3 Effect of Temperature.

4. *Procedure to Study the Effect of Colour Producing Reagent (Alizarin)*

To study the effect of Alizarin concentration on the colour of the reaction, it was added in different amounts (0.01-0.25 mg / 10 ml) to 2 ml of nicotine (1 mg / ml) solution. Mixtures were heated for 60 seconds at 90-100°C in a water bath and the absorbance of the resulting coloured solutions was measured at 520 nm. Results are shown in Table No. 4. A graph was plotted between absorbance and the concentration of Alizarin, which showed maximum absorbance between concentration range (0.12-0.15 mg / 10 ml) at 520 nm. As shown in Fig. 4.

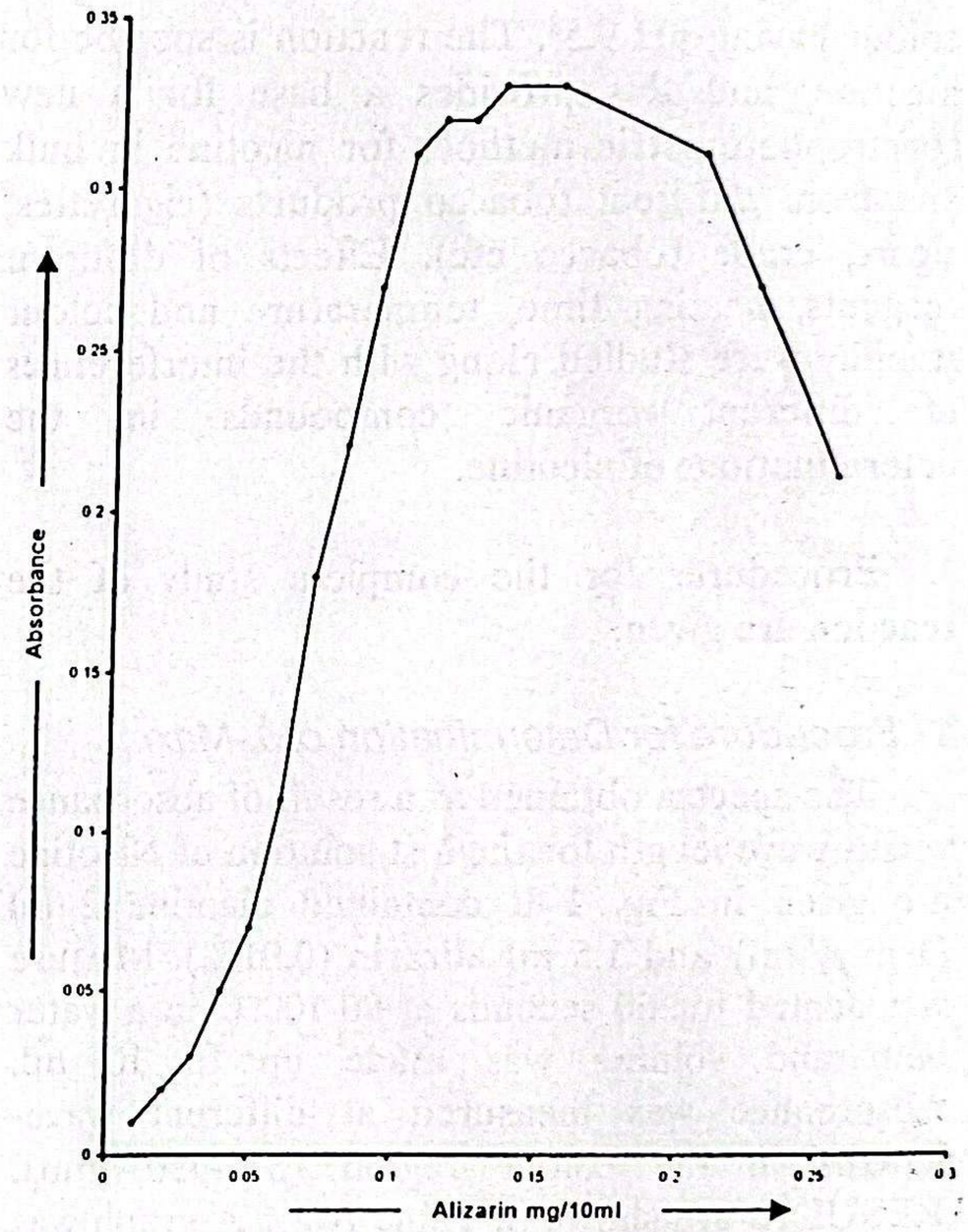


Fig. 4 Effect of Alizarin.

5. *Procedure for the Construction of Calibration Curve for Nicotine*

For the construction of calibration curve for nicotine, different concentrations of nicotine solution, containing up to 1 mg / 10 ml of nicotine, were mixed with 1.5 ml of Alizarin solution (0.01%). Mixtures were heated for 60 seconds at 90-100°C in a water bath. Volumes were made up to 10 ml and absorbance of the resulting coloured solutions was measured at 520 nm. Results are shown in Table No. 5. A graph was plotted between the amount of nicotine per 10 ml and absorbance, a straight line was obtained up to the concentration 1 mg / 10 ml. As shown in Fig. No. 5.

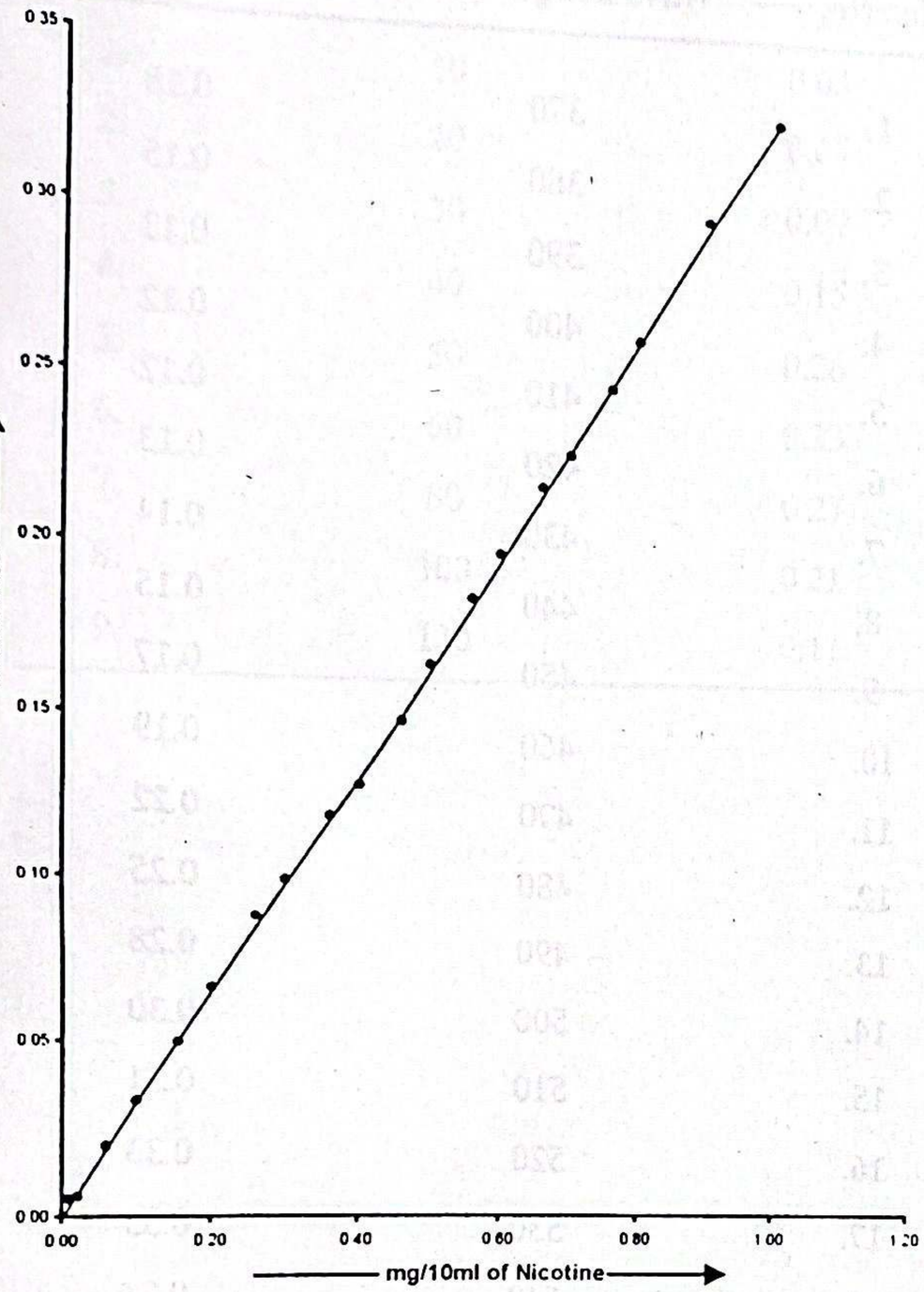


Fig. 5 Calibration Curve for Nicotine.

This indicated that Beer's law was valid in the concentration range 0.01 mg / 10 ml.

6. *Procedure to Study the Effect of Time on Colour Stability*

To study the stability of the colour or the effect of time on the colour stability, 2 ml of nicotine was mixed with 1.5 ml of Alizarin and the mixture was heated for 60 seconds at 90-100°C in a water bath. Absorbance of the resulting coloured solution was measured at 520 nm. Absorbance was measured after 5 minutes for 100 minutes. Results are shown in Table No. 6. A graph was plotted between the time and absorbance. A straight line was obtained as shown in Fig. 6. Which indicated that resulting colour was stable for more than 100 minutes.

To check the interference of various Organic Compounds when present along with Nicotine, 2 ml of nicotine (1 mg / ml) was mixed with 1.5 ml of Alizarin along with different concentrations of various Organic Compounds. Mixtures were heated for 60 seconds at 90-100°C in water bath. Absorbances were measured at 520 nm. Concentration of Organic Compounds was increased till they showed absorbance range of the test solution. Then calculated the percentage of various Compounds, which did not interfere in the determination of Nicotine. Results are given in Table No. 8.

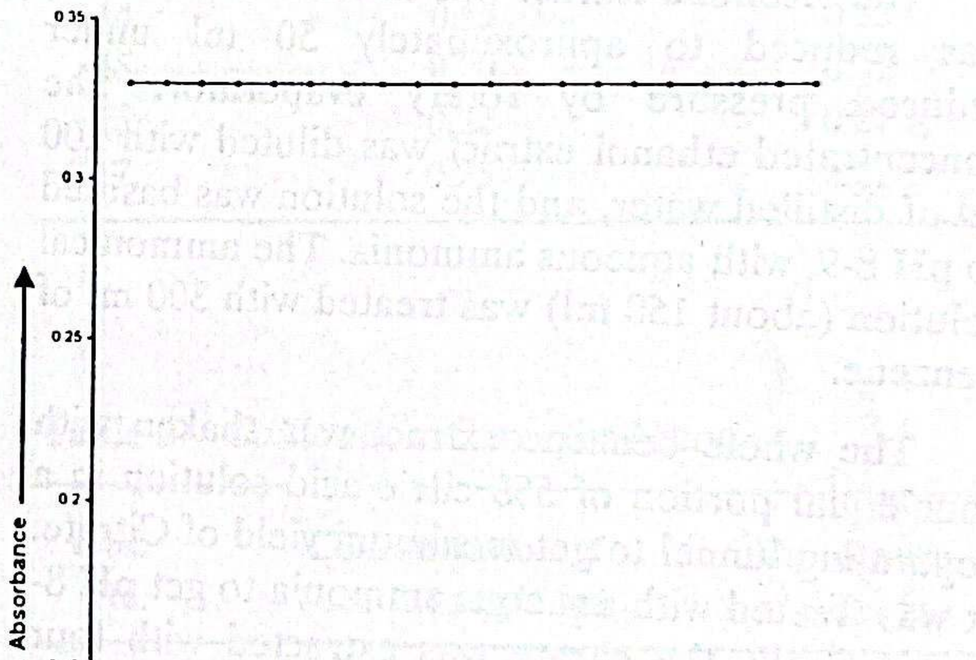


Fig. 6 Effect of Time on Colour.

7. *Procedure for the Calculation of Standard Deviation*

For the calculation of standard deviation, a batch of test samples, each containing the same quantity of Nicotine was tested by developed method. Then from the amount of Nicotine found in each case, the mean value "X" was found and

standard deviation was calculated. Results are shown in Table 7.

8. *Procedure to Study the Interference of Various Organic Compounds*

9. *Procedure for the Determination of Nicotine in different Varieties of Tobacco*

For the determination of Nicotine in different varieties of tobacco extraction of Nicotine was carried out. Extraction procedure used, is described as under.

Tobacco of different varieties (Speight G-108, Speight G-28, KHG-13, KHG-14, KHG-15, Rustica-9, Rustica-11, Rustica-12, Rustica-13, Rustica-14), were taken and finally powdered. 100 gms of each variety was taken and extracted with 600 ml of ethanol.

The alcoholic extract was filtered. The filtrate was reduced to approximately 50 ml under reduced pressure by rotary evaporator. The concentrated ethanol extract was diluted with 100 ml of distilled water, and the solution was basified to pH 8-9, with aqueous ammonia. The ammonical solution (about 150 ml) was treated with 300 ml of benzene.

The whole benzene extract was shaken with four equal portion of 5% citric acid solution in a separating funnel to get maximum yield of Citrate. It was treated with aqueous ammonia to get pH 8-9 and finally the citrate was extracted with four equal portions of chloroform in a separating funnel.

Chloroform extract was concentrated to very small volume under reduced pressure with the help of rotary evaporator. It was dried completely over anhydrous sodium sulphate. Removal of solvent from the dried filtrate gave different quantities for different varieties of tobacco.

Now made the 0.1% solution of each extract (1 mg / ml) 2 ml of the tobacco extract (1 mg / ml) was mixed with 1.5 ml of alizarin (0.01%). Mixture was heated at 90-100°C for 60 seconds in a water bath. Volume was made 10 ml with distilled water. Absorbance of the resulting coloured solution was measured at 520 nm using distilled water as blank. By inserting the value of absorbance in the calibratin curve, the concentration of nicotine in the solution was determined. Same procedure was adopted for each variety of tobacco. Results are shown in Table No. 9[8].

Results

Table 1 *Determination of λ-Max*

Obs. No.	Wave Length (nm)	Absorbance
1.	370	0.18
2.	380	0.15
3.	390	0.13
4.	400	0.12
5.	410	0.12
6.	420	0.13
7.	430	0.14
8.	440	0.15
9.	450	0.17
10.	460	0.19
11.	470	0.22
12.	480	0.25
13.	490	0.28
14.	500	0.30
15.	510	0.31
16.	520	0.33
17.	530	0.33
18.	540	0.31
19.	550	0.29
20.	560	0.26
21.	570	0.23
22.	580	0.21
23.	590	0.18
24.	600	0.13
25.	610	0.11
26.	620	0.08
27.	630	0.05
28.	640	0.04
29.	650	0.03
30.	660	0.02
31.	670	0.01
32.	680	0.00

Table 2 *Effect of Heating Time on the Colour of the Reaction*

Obs. No.	Heating Time at 90-100°C Seconds	Absorbance at 520 nm.
1.	10	0.03
2.	20	0.05
3.	30	0.09
4.	40	0.15
5.	50	0.26
6.	60	0.33
7.	80	0.27
8.	100	0.21
9.	120	0.11

Table 3 *Effect of Temperature*

Obs. No.	Temperature °C	Absorbance at 520 nm.
1.	20	0.03
2.	30	0.08
3.	40	0.14
4.	50	0.17
5.	60	0.21
6.	70	0.25
7.	80	0.30
8.	90	0.33
9.	100	0.33

Table 4 *Effect of Colour Producing Reagent Alizarin*

Obs. No.	Alizarin mg / 10 ml	Absorbance at 520 nm.
1.	0.01	0.01
2.	0.02	0.02
3.	0.03	0.03
4.	0.04	0.04
5.	0.05	0.07
6.	0.06	0.11
7.	0.07	0.18
8.	0.08	0.22
9.	0.09	0.27
10.	0.10	0.31
11.	0.11	0.32
12.	0.12	0.32
13.	0.13	0.33
14.	0.15	0.33
15.	0.20	0.31
16.	0.22	0.27
17.	0.25	0.21

Table 5 *Calibration Curve for Nicotine*

Obs. No.	Concentration of Nicotine mg/10ml	Absorbance at 520 nm.
1.	0.01	0.01
2.	0.02	0.01
3.	0.06	0.02
4.	0.10	0.03
5.	0.16	0.05
6.	0.20	0.07
7.	0.26	0.09
8.	0.30	0.10
9.	0.36	0.12
10.	0.40	0.13
11.	0.46	0.15
12.	0.50	0.17
13.	0.56	0.19
14.	0.60	0.20
15.	0.66	0.22
16.	0.70	0.23
17.	0.76	0.25
18.	0.80	0.26
19.	0.90	0.30
20.	1.00	0.33

Table 6 *Effect of Time on the Stability of the Colour*

Obs. No.	Time in Minutes	Absorbance at 520 nm.
1.	05	0.33
2.	10	0.33
3.	15	0.33
4.	20	0.33
5.	25	0.33
6.	30	0.33
7.	35	0.33
8.	40	0.33
9.	45	0.33
10.	50	0.33
11.	55	0.33
12.	60	0.33
13.	65	0.33
14.	70	0.33
15.	75	0.33
16.	80	0.33
17.	85	0.33
18.	90	0.33
19.	95	0.33
20.	100	0.33

Table 7 *Calculation of Standard Deviation*

Batch No.	Nicotine Taken mg/10ml.	Nicotine Found Mean "X" mg/10ml	Standard Deviation
1.	0.1	0.101	0.0505
2.	0.2	0.205	0.0025
3.	0.4	0.402	0.0010
4.	0.6	0.596	0.0020
5.	0.8	0.793	0.0035
6.	1.0	0.051	0.0255

Table 8 *Interference of Organic Compounds in the Determination of Nicotine*

Obs. No.	Compounds	Maximum Amounts not interfering %
1.	Barbituric Acid	150
2.	Narcotine	200
3.	Ephedrine	250
4.	Quinine	200
5.	Atropine	300
6.	Hyoscine	200
7.	Caffine	250
8.	Haloperidol	100
9.	Benzidine	150

Table 9 *Determination of Nicotine in different Varieties of Tobacco*

No.	Name of the Variety of Tobacco	Amount of Tobacco Taken	Amount of Nicotine %
1.	Speight G-108	100 gms.	1.69
2.	Speight G-28	100 gms.	2.09
3.	KHG-13	100 gms.	1.80
4.	KHG-14	100 gms.	1.94
5.	KHG-15	100 gms.	1.82
6.	Rustica-9	100 gms.	3.10
7.	Rustica-11	100 gms.	2.27
8.	Rustica-12	100 gms.	2.90
9.	Rustica-13	100 gms.	2.88
10.	Rustica-14	100 gms.	3.00

Discussion

Nicotine is a tobacco alkaloid. Due to its toxicity, it is very rarely used as medicine, but is of great pharmacological interest. Externally, nicotine is an antiseptic. Nicotine is mainly used as a horticultural insecticide[6].

During a systematic study of Nicotine, it was found that nicotine reacts with alizarin to give Nicotine derivative having pink colour at pH=9.5, which shows maximum absorbance at 520-530 nm. So, all measurements were carried out at this wavelength range Table, Fig. 1.

Effect of heating time on the colour intensity is shown in Table 2, Fig. 2. It was found that heating for 60 seconds at 100°C in a water bath gave maximum colour intensity and after 60 seconds there was a decrease in the colour intensity.

Effect of temperature on the colour of the reaction is shown in Table 3, Fig. 3. It was found that colour intensity increased slowly as temperature was raised and was maximum at 90-100°C. Thus all the investigations were carried out at this temperature.

Effect of colour producing reagent Alizarin is shown in Table 4, Fig. 4. It was found that 0.12-0.15 mg / 10 ml alizarin gave maximum colour intensity. Above and below this concentration range colour was decreased.

Effect of time on the stability of the colour is shown in Table 6, Fig. 6. It was found that colour is stable for more than 100 minutes, so all readings were carried within this time period. The order of mixing of reagent is not important, as it has no effect on the absorbance, however, during all the experiments total volume of test solution was made up to 10 ml with distilled water.

After mixing the reagent with nicotine (1 mg / ml) and heating the mixture at 90-100°C for 60 seconds, pH of the solution was noted after diluting it to 10 ml., pH of the solution was found to be 9.5. Since the reaction does not involve any acid or base, so all the investigations were carried out at this pH.

Beer's Law was obeyed between the concentration range 0.01-1.0 mg / 10 ml as shown in Table 5, Fig. 5. Above this concentration the colour becomes turbid. The present method for the determination of nicotine was successfully applied for its determination in pure form. Standard deviation was calculated for the sets of 6 readings. It was found that standard deviation does not exceed 0.05. Results are shown in Table 7.

Interference of various Organic Compounds in the determination of nicotine was checked and the maximum tolerable limits of the Organic Compounds not interfering in the determination are reported in Table 8.

The developed method was applied for the determination of Nicotine in different varieties of tobacco found in Pakistan. Results are shown in Table No. 9. Speight G-108, Speight G-28 contain 1.69 and 2.09 g / 100 g of nicotine respectively. KHG-13, KHG-14, KHG-15 contain 1.80, 1.94 and 1.82 g / 100 g of nicotine respectively. Rustica-9, Rustica-11, Rustica-12, Rustica-13, Rustica-14 contain 3.10, 2.27, 2.90, 2.88 and 3.00 g / 100 g of nicotine respectively. These results showed that all the samples of tobacco analysed contain high amount of nicotine, which exceeds the fatal dose of nicotine i.e., 40 to 60 mg for an adult[4]. It was observed that the highest amount of nicotine found in Rustica-9 i.e., 3.10 g / 100g.

The developed method is very simple, rapid and precise and does not involve any solvent and there is no need for pH control. Other alkaloids do not interfere in the determination[8].

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REVIEW ARTICLE

MERITS AND DEMERITS OF CHEMICAL IRRADIATION AND SURGICAL OOPHORECTOMY AND ITS ROLE IN MANAGEMENT OF BREAST CANCER

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Introduction

Breast cancer is a serious, stressful, life threatening disease[1] and is one of the leading causes of cancer death among women[2]. Breast is essentially an exocrine gland, whose function is influenced by a number of endocrine glands, like ovary, adrenal and pituitary gland. The mechanism of their hormonal effects is particularly relevant to breast cancer since the growth of many tumours of the breast appears to be related to their hormonal environment. If the female oestrogenic hormone is not the principal carcinogenic agent responsible for originating breast cancer, it at least creates a favourable environment for development and progress of cancer of the breast.

The history of physiological basis for treating advanced breast cancer by oophorectomy dates back to late nineteenth century, when Beatson introduced surgical oophorectomy based on the hypothesis that breast cancer may be hormone dependant[3]. Although the surgical oophorectomy remained popular for some time but soon fell into disfavour, especially after the popularization of irradiation castration. Taylor in 1939 reported regression in about one third of the cases with recurrent disease[4] but soon it was identified that irradiation has a temporary effect and some patients may continue to menstruate.

Hormonal treatment has until recently been the main mode of therapy of metastatic mammary carcinoma and this method of treatment has recently been more clearly defined by the identification of eostrogen receptor proteins in normal breast tissue and in a proportion of malignant tumours. It has been shown that the in vivo growth of 50% of tumours having oestrogen receptors could be inhibited by endocrine manipulations, whereas only 10% of receptor negative tumours were so affected[5]. In 1974 Phillibert and Raynaud made available R 5020, synthetic progestin, to test for progesterone receptor proteins in the breast tumours[6]. The subject of progesterone receptors is under laboratory and clinical evaluation at present. The prospect of selecting hormone dependent tumours for appropriate treatment is one of the most recent development in the management of breast cancer particularly by the use of anti-oestrogens. Barnes et al., have reported that the antioestrogens Tamoxifen. Nafoxidine and clomiphene have an objective effect in 50 percent or more of all cases of oestrogen receptor positive metastatic disease[7].

Mechanism of Hormone Action

Jensen et al. and Gorski et al., postulated the current concept of mechanism of hormone action on the oestrogen receptor system. According to them steroid hormone action is restricted to those cells that contain appropriate intercellular receptors. Circulating steroid hormones enter the cytoplasm and join with the receptor. The steroid receptor complex undergoes transformation allowing its translocation to the nucleus, where the receptor complex interacts with DNA and or specific chromosomal proteins, ultimately altering the pattern of gene expression. Any interruption in this hormone modulated pathway disrupts the hormone dependent cellular process, ultimately leading to cell death[8,9]. Surgical endocrine ablation may accomplish this task from the out set by removing the source of the hormone and thus abolishing its availability. Antioestrogenic substances (e.g., Tamoxifen, Nafoxidine and C 1928) appear to compete with oestrogen for the specific receptor proteins. After binding, the antioestrogenic receptor forms a stable complex and undergoes nuclear translocation.

The oestrogen antagonistic effect of progesterone may be due to a negative feed back inhibitory process. Some tumours are hormone independent and it may be explained as a result of conversion of hormone dependent cells during neoplastic transformation.

Merits and Demerits of different Methods of Oophorectomy

Review of the old and recent literature on the subject shows that surgical oophorectomy is superior to irradiation. Ahlbom failed to note any real benefits in 163 patients who were treated in the radium hemmet in stockholm[10]. Dressr, on the other hand, reported favourable results in 43 percent of 59 cases[11].

The fact that ovarian irradiation does not result in complete suppression of oestrogens has been fully established. Nathanson found smaller decrease in urinary oestrogen and a smaller rise in gonadotrophins following ovarian irradiation than following oophorectomy[12].

As compared to irradiation, surgery is more certain and more rapid in onset of ovarian castration. In selection of the treatment of choice, each case must be considered on its own merits.

The value of routine prophylactic ovarian irradiation after radical mastectomy is a controversial subject. Taylor reported prophylactic irradiation in 47 young women with breast cancer, with no beneficial effect[13]. Smith and Smith considered that prophylactic surgical oophorectomy prolongs the survival rate of patients with breast cancer and axillary metastasis[14].

Dresser gave[11] routine irradiation to the ovaries 10 days after mastectomy and gained the impression that this procedure caused a delay in recurrence and metastasis. Discussing the place of radiotherapy in the management of early breast cancer. Cole reported that the overall 5 year survival rate for 369 patients castrated shortly after breast surgery was 58.3%. The overall 5 year survival rate was 51.2% for the castrated group and 47.3% for the control group[15]. He claimed that the trend in this clinical trial favoured an artificial menopause performed prophylactically.

Fisher presented the results of the National Surgical Adjuvant breast project studies on oophorectomy, post-operative radiation and chemotherapy. The data were contributed by more than 40 institutions. Prophylactic oophorectomy was evaluated in 357 patients and no advantage, either at 3 years or at 4 or 5 years was found after surgical oophorectomy in patients with or without lymph nodes and it was concluded that there was no justification for prophylactic oophorectomy in the treatment of operable breast cancer[16].

One of the Canadian reports[17] showed that in a series of 183 patients, in 97 oophorectomy was performed as a primary treatment for metastatic disease. Out of these 30 percent had a positive response. Of the 61 patients treated by radiation ablation. 21 percent had a positive response. The overall response to ovarian ablation, regardless of method was positive in 31 percent of those in the premenopausal group, and in 16 percent of those in the at menopausal group. A positive response was not seen in those in the post menopausal group. This no significant difference in the response of patients with metastatic carcinoma of the breast to surgical oophorectomy (30%) compared to radiation ovarian ablation (21%) (although the response rate of those in the radiation group was slightly lower than that for surgical group) may lead to a trend in choosing radiation ablation over surgical oophorectomy in patients with a relatively high proportion of factors associated with surgical risk. Also poor response in postmenopausal women, older, obese, in poor general condition or when the disease is advanced, radiation ablation may be the method of choice. It appears that the clinical determinants rather the efficiency of one method over the other should be the main factor used in deciding whether or not to treat a patient by radiation or by surgical oophorectomy.

Surgical oophorectomy offers a quick response which may be important in rapidly developing lesions. It has the advantage of examining ovaries and also through same incision the abdominal metastasis may be sought. However the surgical oophorectomy does carry the risk of any surgical operation requiring general anaesthesia.

Radiotherapy on the other hand may be used in patients with medical conditions contra-indicating operation or in obese patients. Radiation has advantage over surgery that it can be received on an outpatient basis without mortality with slight morbidity to the patients.

Chemical Oophorectomy by Antioestrogen Therapy

The strong affinity for labelled oestradiol by certain target organs and their tumours, both experimental and human, can be effectively blocked by synthetic nonsteroidal compounds such as Nafoxidine and clomiphene[18]. The ability of such

agents to interfere with oestradiol binding in target tissues may be explained by the competitive uptake of these compounds by cytoplasmic oestrogen receptors. By causing oestrogen deprivation of tumour tissue, anti-oestrogens may prove of value as therapeutic agents for advanced breast cancer. They may also serve as indicators of tumour hormone dependence, and in such cases further endocrine therapy, including ablation procedures, may be worth while when the initial response to anti-oestrogen is no longer sustained.

Jensen[18] is of the opinion that in about one in three cases of advanced breast cancer in post menopausal women, an appreciable number of oestrogen binding receptors are present and that most of these tumours will respond to anti-oestrogen or endocrine ablative procedures.

The anti oetrogens, Tamoxifen, Nafoxidine and clomiphene have an objective effect in 50 percent or more of all cases of oestrogen receptor positive metastatic disease[7].

Progestin may act as anti-oestrogen both directly on tumour cells by inhibiting binding of oestradiol to receptors[19] and indirectly by reducing the amount of oestrogen available to the tumour cells by increasing the catabolism of oestrogen, decreasing the conversion of androgens to oestrogen, and by medical suppression of hypophyseal release of LH and FSH.

Stoll[30] is of the view that there seems to be higher response rate for androgens in osseous metastasis and a higher response rate for oestrogens in metastasis to soft tissues and to the lung.

The rapidly accumulating data show a response rate of more than 50% in oestrogen receptor rich tumours compared to about 10% in oestrogen receptor poor tumours, independently of therapeutic measures. This correlation between therapy and objective response has increased to about 75% in tumours containing oestrogen receptors and progesterone receptors[21].

Is endocrine manipulation as effective as surgical ablation? Jensen reported 70% response rate to surgery, as compared to 42% remission rate with endocrine manipulation[22].

Although anti-oestrogenic agents have shown encouraging results but their toxicity have limited their use. The different side effects reported are skin toxicity and induction photosensitivity. Bloom[23] has reported dryness of the skin and cutaneous photosensitivity to sun light with the use of nafoxidine for more than two months. He also reported that patients suffered from increased loss of scalp hair and reduction in hair pigmentation. However, he did not find any gastro intestinal or cardio vascular complications nor any deterioration in liver or marrow function, which is usually ascribed to the anti-oestrogens. However, they reported progressive bilateral cataract in a women aged 40 year who received nafoxidine for three years.

Conclusion

In conclusion identification of receptor proteins in breast tissue and tumours of the breast had a profound advancement in the management of advanced breast cancer. In all patients with breast carcinoma presence of oestrogen and progesterone receptors must be confirmed and after identification of hormone dependency the tumour may be managed either by Surgical, radiation or chemical oophorectomy.

As regards the choice between three methods of oophorectomy. The surgical oophoretomy has been proved to be superior certain and rapid in controlling hormone dependent carcinomas. The other two methods i.e., chemical and radiation for oophorectomy may be used in patients who are not fit for operation.

As regards the choice between chemical and radiation methods, radiation has more side effects than chemical as defences of the body may be lost i.e., immunosuppression may occur.

In all fairness one has to individualize regarding the method of choice between surgical, chemical and radiation oophorectomy and each case must be considered on its own merits.

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VECTORIAL CAPACITY OF ANOPHELES STEPHENSI IN MUZAFFARGARH PUNJAB, PAKISTAN

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Summary

In the transmission season of 1993, malathion 5% WDP (2g/sqm) were sprayed in sex different localities of district Muzaffar Garh. Their regular day time early morning resting population surveys of mosqitoes showed the complete absence of Anopheles culcifacies while maximum density per positive room for A stephensi was 68.30 14.21 along with slide positivity rate of 28.81% in one village Khokhar, while in Ghazi Ghat, the density was 27.25 6.38 with minimum slide positivity (4.85%). One month later regular day time early morning resting population of A. stephensi in the village Khokhar were daily collected up to seven days. They were disected and salivary glands were thoroughly examined for the presence of sporozoites. Out of 821 disections made, complete absence of sporozoites still doubts their vectorial capacity.

Introduction

Although Anopheles stephensi is a very efficient vector of malaria in different parts of the world but in Pakistan it does not transmit malaria with the same intensity, which require a careful investigations regarding its vectorial capacity.

Generally stated, vectorial capacity is "the product of all the interacting factors that cause an arthropod vector to become infected with a given pathogen and transmit it to it's vertebrate host" (Tidwell, M.A., personal communication).

There has been a long standing debate whether malathion should remain the insecticide of choice in Pakistan and controversy is over the vectorial status of A. stephensi in rural Pakistan (Pervez and Shah, 1989). The operational significance of malathion resistance was first reported from Pakistan almost three decade ago by Rathor et al (1985). In North West frontier province refugee camps, malathion resistant A. stephensi and A. subpictus were the most abundant anopheline, while A. stephensi and A. subpictus were the most abundant anopheline, while A. culicifacies and other species have been reported increasingly resistant (Rowland and Hemingway, 1987). Rowland et al. (1997) reported many anopheline vectors in Afghan refugee villages in north-west Pakistan, after detecting by head-and-thorax ELISA circumsporozoite antigen bioassay. They checked 15387 A. stephensi and found 2.2% and 0.7% positive for Plasmodium vivax and P. falciparum respectively. Keeping in view such facts the present investigation is aimed to findout the vectorial capacity of A. stephensi in the complete absence of A. culicifacies.

Materials and Methods

Residual spray with malation 5% WDP (2g/sqm) in six different localities (with favourable topographical conditions for breeding and living of A. stephensi) of district Muzaffar Garh were made. After one month of spray, density per positive room for A. culicifacies and A. stephensi was checked. On the basis of maximum density per positive room the village Khokhar tehsil Kot Adu, district Muzaffar Garh (Map I and II) was further selected to find out the association of A. stephensi with malaria transmission. For this purpose day time early morning resting population of A. stephensi was collected by hand capturing and flitting methods. Their disections were made and salivary glands were thoroughly examined for the presence of sporozoites.

Results

During the malaria transmission period in Pakistan results of residual spray with malathion 5% WDP (2g/sqm) in six different localities of district Muzaffar Garh showed the complete absence of A. culicifacies in all the localities (Table I). While the maximum density per positive room for A. stephensi was 68.30 14.21 at Khokhar along with slide positivity rate of 28.82% (Table I).

Keeping in view these findings, one month latter, A> stephensi from village Khokhar were further collected for seven consective days, disected and their salivary glands were thoroughly checked for the presence of sporozoites but despite of very careful observations, no sporozoites were found i.e. vectorial capacity of A. stephensi was not confirmed (Table 2).

Table 1 *Epidemiological data after Residual Spray with malathion (2g/smq) in District Muzaffar Garh*

Survey	Spray	Locality	Slides Examination (n)	+ ve	SPR (%)	Density per positive room	
						A. cul	A. steph
6-9-93	12-8-93	Basti Mehmood	30	6	20	01	12.50 4.06
7-9-93	16-8-93	Maqsood Pur	27	2	7.41	0	14.25 5.11
9-9-93	7-8-93	Ghazi Ghat	103	5	5.85	0	27.25 6.38
10.9.93	2-8-93	Thata Gurmani	95	7	7.37	0	13.50 4.67
11-9-93	9-8-93	Khokhar	475	134	28.21	0	25.25 6.47
7-1-93	9-8-93	Khokhar	177	51	28.81	0	68.30 14.21

SPR = Slide positivity rate
+ve = positive
exam = examined
A. cul = Anopheles culicifacies
A. steph = Anopheles stwephensi

Table 2: Salivary Gland Disection of Anopheles Stephensi

Collection	Disection	Disected A. stephensi	Salivary Gland Positive
11-12-93	11-12-93	152	Nil
12-12-93	12-12-93	157	Nil
13-12-93	13-12-9	145	Nil
14-12-93	14-12-93	141	il
15-12-93	15-12-93	126	Nil
16-12-93	16-12-93	100	Nil
	Total	821	Nil

Discussion

Our results showed that although A. stephensi is playing an important role in the transmission of malaria in rural areas but not pathological evidence supported this finding as their salivary glands were not harbouring sporozoite.

Vectorial capacity of A. stephensi in Pakistan have also been reported by Pervez and Shah (1989) after finding sporozoites in the salivary glands of 3 A. stephensi out of 199 (1.5%) disections. Pervez and Shah (1989) stated, that the role of A. stephensi in transmission of malaria in Afghan refugee camp and they were of openion that this inference was based on the fact that A. stephensi was the dominant species in camps areas, where high resistance to malathion was present thereby resulting high malarial incience in those areas. This appears to be a logical conclusion but does not specifically prove the role of A. stephensi as a main vector. One more experience do cast some doubt on the present role of A. stephensi as a vector have been observed by Javeed, A. (personal communication) in August, 1989 in district Muzaffar Garh where 61 cases of P. vivax and 25 cases of P. falciparum were noted. The area was sprayed with malathion 5% WDP on 20th November 1989 and after 82 days of spray another survey found an average of 25.5 A. stephensi and 1.5 A. culicifacies per room. At the same time, only one P. vivax and one P. falciparum were detected. It was concluded that spraying with malathion had little effect on A. stephensi densities but did coincide with a reduction of malaria transmission in the locality.

On the absence of pathological evidence the role of A. stephensi have not been given any consideration (Lewis, 1990) but findings regarding the epidemiological and pathological role of A. stephensi (Pervez and Shah, 1989; Rowland et al., 1997) are in favour of the revaluation of the role of A. stephensi.

Most malariologists hold that "vectorial capacity" as calculated by Garret John's equation plays "the vital role" in malaria transmission dynamics. Apart from other factors "vectorial capacity" is largely dependent on "vector density per positive room" which in turn is influenced by factors like proximity of breeding places to human community; their number, size, and how long they remain patent. Biting habits of the vector and its anthropophilic habits are equally important determinants. Inspite of these limitations, "vectorial capacity" is still used to estimate transmission dynamics (Sharma et al., 1996). In India, A. stephensi has been reported a very efficient malaria vector, sporozoites positivity ranged from 20 to 86 percent in different experiments but it does not transmit malaria with the same intensity in different parts of India due to duration of extrinsic or sporogony cycle of P. vivax and P. falciparum in A. stephensi. There are many other aspects of similar nature observed by malariologists all over the world which require careful investigations so that correct interpretation of these phenomena can be made and applied in the new strategies of malaria control (Sharma et al., 1996).

A. stephensi have also been reported resistant to malathion in various of Punjab districts Pakistan (Rana et al., 1997) as well as in our neighbouring country India (Sharma et al., 1996).

Present findings high lighted the role of A. stephensi in the malaria spread in rural areas as well as its increasing resistance against the routinely used insecticide i.e. malathion. Considering these findings preliminary, it is suggested that the vectorial capacity/competence of A. stephensi should be further checked in the different areas of Pakistan and unequivavably establishd before launching proper control measures.

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THE STATE OF LOGISTICS IN PHC FACILITIES IN DISTRICT MULTAN

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Summary

A study was conducted as a part of the routine supervision in district Multan of the PHC facilities. The main objectives were to ascertain the rate of absenteeism of staff; presence of medicines; availability of oxygen and electricity; and maintenance of facility buildings. It was proved that though the absenteeism of staff from their place of duty was rampant but the state of logistics was rather horrendous. All essential Medicines were available only in 4% cases while emergency articles like oxygen were available in four of the 82 health facilities surveyed. It has been concluded that notwithstanding the interventions made much more requires to be done including radical re-structuring even re-thinking whether the PHC should continue to be in the public domain or run through a private business, NGO agreement with government or some mix.

Background

Multan is an agrarian district in the southern Punjab Province of Pakistan. The Government of the Punjab, Health Department has been providing health services to the people of district through a chain of health facilities. In the city, this is through the outlets of the Municipal Corporation Multan (MCM). A 60 bedded Civil Hospital, which is being up-graded complements, the MCM health service. The Nishtar Medical College and Hospital, Multan, is a tertiary care facility. This caters not only for the special health care needs of the district Multan but also drains patients from the southwest Punjab, south NWFP and east Baluchistan. In rural areas, there is a chain of health facilities organised under District Health Officer, Multan. The table below gives the administrative divisions and the health infrastructure.

Administrative Division, and PHC Infrastructure of District Multan

Poor logistics and high staff absenteeism have often been quoted as the main factors for the bad performance of public sector health facilities in the district. To ascertain this and as a part of the usual supervision arrangements, a survey of almost all health facilities in district Multan was conducted on Saturday 23 May 1998.

Sample

In district Multan, the chain of primary care health facilities comprises of 8 Rural Health Centres (RHC); 73 Basic Health Units (BHU); 5 Maternal and Child Health Care Centres (MCH); 2 Dispensaries; and 75 Out-reach Teams for rural areas. In this study only static health facilities were surveyed. The sample of facilities that was included is as below:

Name	Population	Villages	Urban Wards	Union Councils	Out-reach Teams	BHUs	RHCs	SHC	GRDs
Multan Rural	1153053	331	-	47	46	42	5	8	1
Town Committee Qadir Pur Rawan	20878	-	10	-	-	-	-	-	
Town Committee M. Rashid	15021	-	12	-	1	-	-	-	-
M. Corporation Multan	1197223	-	74	-	36	-	-	-	-
Multan Cantonment	119846	-	10	0	4	-	-	-	-
Shujabad Rural	763675	184	-	28	28	29	3	7	1
M. Committee Shujabad	67421	-	19	-	2	-	-	-	-
Town Committee Jalalpur Pirwala	28125	-	12	-	1	-	-	-	-
Total	3365274	515	137	75	119	71	8	15	2

Source: Directorate of Health Services, Multan

Sr. No.	Health Institutions	Total Number	Total Surveyed
1.	Rural Health Centres	8	8
2.	Basic Health Units	71	68
3.	Govt. Rural Dispensaries	2	1
4.	MCH Centres	5	5

Training of Survey Teams and Data Collection

The Officers undertaking the survey were briefed on the use of survey instruments. They visited the facilities and physically obtained the information and coded the proformas in the presence of the facility staff. These data forms were then collected from the enumerating officers and fed into a specially designed database using software "EXCEL". The rates and percentages were calculated and the results were then processed using word processor, the "MS WORD" package.

A total of 82 health facilities was surveyed. These included 8 RHCs, 5 MCH Centres; 1 Government Rural Dispensary; and 68 BHUs. As such, there-fore, this was a census survey of health facilities in district Multan.

Survey Instrument

The Government of the Punjab, Health Department has been using a supervisory instrument. This was adapted by the District Health Officer that was further modified and finally approved by the Director Health Services, Multan. This was designed to check variables like absenteeism of staff; availability of medicines, oxygen and electricity; and maintenance of facility buildings.

Survey Team

Eight survey teams were constituted each comprising of an Officer of the Directorate Health Services, Multan. The target health facilities and route plan were given to them on the morning of Saturday 23 May 1998 before departing for the survey. This was done in order to avoid leakage of information to the facilities and prevent them making any preparation for the visit.

Data Analysis

The tabulation plan was prepared in the light of the key indicators fixed beforehand and inter-relationships between different variables were established. The quantitative appraisal of data is presented in the results given below:

Results

Absenteeism

The absenteeism of staff from their place of posting during duty hours has been a major issue in the Health Department. To curb this menace various measures have been undertaken by the Administration in the Health Department. In this regard, the Director and his Team has been very active in the recent months and also third party supervision through the district administration and specially assigned supervisors of the Health Department. On the day of the survey it revealed that the support staff viz. Dais and Naib Qasids were most frequently present. Next were the Doctors (61%) while the paramedics (Lady Health Visitors and Medical Technicians) were found present in 49% of cases. The absenteeism in outreach workers was most significant. The Vaccinators were present in only 28% of cases and the Sanitary Inspectors turned up in 40% of cases. The results are shown as follows:

Sr. No.	Category	% Present	% Absent
1.	Medical officers	61	39
2.	Lady Health Visitors	49	51
3.	Medical Technicians	49	51
4.	Sanitary Inspectors	40	60
5.	Vaccinators	28	72
6.	Dais	62	38
7.	Naib Qasid (Peon)	63	37

Presence of Medicines

The availability of medicines at the health facilities was checked for all essential drugs including emergency drugs.

It transpired that at only 4% of health facilities (BHU Nawabpur, RHC Qadirpur Rawan, and RHC Mardanpur), all essential drugs

were available. In 51% of health facilities the medicines were available yet these were not considered enough for the efficient performance of a primary health care facility. On the other hand at 45% of health facilities, there were no medicines at all.

Availability of Oxygen

Oxygen is an important commodity in order for staff to deal with any emergency situation. Each BHU has therefore been provided two beds and oxygen equipment especially for Obs. / gyn. emergencies. All health facilities should ideally have filled oxygen cylinders. However, the situation was rather horrendous. At only 6% of health facilities the oxygen cylinders were found filled. At the remaining 94% of facilities these were lying empty. Oxygen supplies were available at two RHCs (Kotli Najabat and Qadirpur Rawan) and three BHUs (Abbaspur, 6-MR, and Gulzarpur).

Availability of Electricity

Out of the 82 health facilities surveyed, 48% had an active electricity connection. In 47% of cases this had been disconnected due to non-payment of electricity bills. The BHU Tateypur is disconnected since 1995 while BHU Khairabad for the last one year. In 5% of health facilities (Jhoke Vaince, Bungul Wala, Jehangirabad, and Rasoolpur) the electricity connection has not yet been provided. The situation is evident at a glance from the above figure.

Maintenance of Buildings

The buildings of the health facilities are often in a poor state of maintenance. For the survey purpose these were divided into residential blocks and lawns. The clinical area and service component of the building was not included in the study since these are generally well kept. The residential buildings were poorly maintained in 71% of cases, while in 29% of cases these were in a proper shape. This had some relation with their occupancy rate. In 10% of instances the residences had been occupied and 90% were lying vacant. Similarly, lawns were maintained in only 20% of cases. In 80% of facilities these were ill maintained. Figuratively this is depicted as below:

Building / Area	% Properly Maintained	%Ill Maintained
Residential Buildings	29	71
Lawns	10	90

Conclusion

From the situation of logistics and staff attendance in PHC in district Multan a serious picture of deficiencies in health services emerges. The factors that have led to such a situation are numerous and require an in depth study. Some positive actions have already been taken. These include work on providing appropriate administrative, legal and financial powers to districts as part of the government's decentralisation programmes. This may allow greater opportunity for assigning responsibilities to senior managers for the allocation and proper use of staff and material resources, essential to the delivery of better quality healthcare to local people. Service packages, specifying the types of services available at each facility (and outreach to the villages) with clearer organisation and management systems and structures are fundamental aspects in remedying the kinds of basic deficiencies described in the study. However, much more may be needed including radical re-structuring even re-thinking whether the PHC should continue to be in the public domain or run through a private business, NGO agreement with government or some mix.

1997 estimates are used since results of population census 1998 are not available as yet.

This supervisory survey was lead by Dr. M. Iqbal Khan, Director Health Services, Multan and Dr. Muhammad Qasim Qureshi, District Health Officer, Multan. The data so generated has been used in this document. The Author gratefully acknowledges this.

Traditional Birth Attendant

Office runner who provides support to the office staff.

The Vaccinators are required to mark their attendance in the health facility before moving out to villages.

There was no standard fixed prior to survey as to the availability of a medicine to determine as insufficient. This was left to the surveying officer to the judgment of the enumerating officer to label the state of availability of medicine as available; insufficient or not available.

There was no standard fixed. Instead, the determination of properly maintained or ill maintained was left to the judgment of the enumerator. They, however, objectively verified the occupancy of the building.

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ROLE OF MASS MEDIA (LOCAL RADIO) IN THE FIELD OF HIV AND AIDS

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Introduction

(This article was written during the stay of the author at the South Bank University London).

Human Immunodeficiency Virus / Acquired Immunodeficiency Syndrome (HIV / AIDS) is one of the key areas in Health of the Nation. Its objectives are to reduce the incidence of HIV infection along with reducing gonorrhoea and other sexually transmitted diseases, and to reduce the number of un-wanted pregnancies.

There are several methods to promote sexual health and prevent HIV infection. The author selected mass media (local radio) to achieve health of the nation targets in his work area.

The author has discussed role of mass media in promoting sexual health and preventing HIV infection.

HIV / Aids and Sexual Health

HIV / AIDS and sexual health is one of the key areas, included in the Health of the Nation, the strategy for health in England. Its objectives are:

"to reduce the incidence of HIV infection, to reduce the incidence of other sexually transmitted diseases; to reduce further and strengthen monitoring and surveillance; to provide effective services for diagnosis and treatment of HIV and other STD's, to reduce the number of unwanted pregnancies; to ensure the provision of effective family planning services for those people who want them" HON (1986).

The targets of health of the nation are:

- To reduce the incidence of gonorrhoea among men and women aged 15-64 by at least 20% by 1995
- To reduce the rate of conceptions amongst the under 16s by at least 50% by the year 2000.
- To reduce the percentage of injecting drug misusers who report sharing injecting equipment in the previous four weeks by at least 50% by 1997, and by at least a further 50% by the year 2000. HON (1986)

By promoting use of condom always during penetrative sex we can reduce the incidence of gonorrhoea and reduce the rate of conceptions. Consistent use of condom will also help in preventing HIV infection. Reducing the percentage of injecting drug misusers who share injecting equipment will also reduce chances of transmission of HIV. In short achieving these targets will help to meet the objective of reducing the incidence of HIV infection.

Aetiology and Epidemiology of Aids

Human Immunodeficiency Virus (HIV) is the virus responsible for the acquired immunodeficiency syndrome (AIDS). The virus probably appeared in 1979 but was fully recognised in 1981.

AIDS can be transmitted by sexual contact and contamination by blood and blood products. Because of the limited mode of transmission well defined risk groups have emerged. (Table 1)

The origins of HIV are unknown although it was present in Africa in 1959. It is thought that the infection was transmitted to humans from primates or HIV developed from a non-disease producing lentivirus in humans.

HIV is transmitted in three main ways:

- Through unprotected Sex (anal or vaginal).
- By injecting drug users sharing equipment including syringes and needles.
- From an infected mother to her unborn child (HEA 1990).

Needs Assessment

There were 8252 people suffering from AIDS and 20,590 HIV positive at the end of October 1993 and end September 1993 respectively in UK. (South Beds Health, The Lodge Library). The North East Thames Health Region, the part of the country where I work has highest number of Aids

Table 1:

Adults	Children
Hmosexual or bisexual men	New born whose mothers have AIDS or are HIV positive
Heterosexual drug abusers	Recipients of blood / blood products
Homosexual / bisexual drug abusers	Haemophiliacs
Recipients of blood / blood products	(Farthing and Rolston 1990)
Haemophiliacs	

cases concentrated. I think theses statistics are enough to proactively work in this key area of health of the nation. Nevrtheless health promotion must recognise the stage of development of the learner and start from that point onwards. This stage of development can be assessed by a survey or any other evaluation tool. Weare K. (1992).

One should be prepared to be reactive to the needs of the clients for fine tuning of a programme or project. On going assessment and evaluation of a project can help to make changes in the project if necessary. This will benefit the clients as well as further ensure success of the project.

Methods

The unit author was working with provide HIV and AIDS services to the community in collaboration with the health authorities of the region and Family Health Service Authority. The services they are offering are:

- HIV Testing
- Helpline
- Befriending Centre
- Counselling and Support
- Education and Training
- Library and Information
- Drop in Centre
- Support for clients and carers
- Other relevant HIV / AID services

The staff working there as it seems to me is committed and well motivated to carry out their work. They are specially trained in their respective fields and work with a professional approach towards their work. They are achieving results comparable to the other organisations of their size and stature.

The methods they are employing to deliver their services are as follows:

- Giving talks
- Group work and group teaching
- One to one teaching
- Written materials (leaflet etc.)
- Social skill training
- Counselling
- Advice
- Education and training
- Advocacy
- Working with communities

Now some of these methods will be briefly described:

Giving a Talk

Giving a talk or a formal lecture is one of the feature of health promoter's work. It can introduce a subject by giving an overview of the subject and this may lead the audience to take further action. Its main drawback is that it is mainly a one way method. Ewles & Simnett (1992)

Group Work and Group Teaching

Working with clients in groups actively involve them with their own health issues. These groups can work on one or more of the following issues.

HIV / AIDS is one of the key areas in Health of the Nation. Its objectives are to reduce the incidence of HIV infection along with reducing gonorrhoea and other sexually transmitted diseases, and to reduce the number of un-wanted pregnancies.

There are several methods to promote sexual health and prevent HIV infection. I have selected

mass media (local radio) to achieve health of the nation targets in my area.

I have discussed role of mass media in promoting sexual health and preventing HIV infection.

HIV / AIDS and Sexual Health

HIV / AIDS and sexual health is one of the key areas, included in the Health of the Nation, the strategy for health in England. Its objectives are:

- Awareness raising
- Mutual support
- Social action
- Education
- Group counselling

The group should have a clear goal. Any confusion in the aims of a group can lead to disruption. Leadership problems in a group can also hinder its performance.

One to One Teaching

This method is most helpful to tackle sensitive issue like sexual health. The client can be imparted with information and knowledge relevant to him. The material can be individually tailored to meet the needs of the client. There is a direct interaction between the tutor and the tutee, but it needs lots of resources and time to reach large number of clients. It can be impossible to reach masses using this method.

Written Materials (Leaflet etc.)

This method can be used to disperse information to a large population in less time.

A leaflet can only transmit its message if people are able to read it or willing to read it. Language barriers and lack of interest in the subject can make this method ineffective.

Teaching Practical Skills

Along with providing information and teaching new skill to the clients, it is also important to build confidence in them to perform the skills.

Counselling

Counselling is helping people to make a choice. Basic skills of counselling are to understand non-verbal communication, listening to the people and helping them to talk. Counsellor also needs the skills of asking questions and obtaining feed back. Ewles and Simnett (1992)

Other methods such as role play, advice, advocacy etc. can also be used in health promotion, especially to deal with sensitive issues. Such as sex and sexual relations, HIV / AIDS, gay problems etc.

Education and training is also one of the methods used to by health promoters in the field of sexual health and HIV and AIDS.

Selecting A Method

There is a large range of methods they are being employed for health promotion in this health promotion unit. As I have mentioned earlier if we look at their results they are quite impressive. If we further break down the results and look at them in a greater detail the majority of the users and beneficiaries of these services are older people or middle aged people. The younger population is utilising these services proportionally less often as compared to older or middle aged population. According to WHO at least half of all HIV cases are amongst 15-24 years aged population. These teenagers and young adults which are at greatest risk of contacting HIV / AIDS are using the ser-vices at the unit in quite a few numbers.

If we think for the reasons behind this poor utilisation of the service by the teenagers and young adults, these may be that the messages are not reaching them or perhaps if the messages are reaching them they can not relate themselves to be one at the risk of this disease.

Other dilemmas for this unit are that they are working in a largely conservative area with mainly middle class English population. Sex education in schools is in very basic form. Majority of the parents and perhaps most of the teachers and not in favour of explicit sex education in schools.

The prevailing policies of the education department are not conducive for comprehensive sex education in schools at ages when it can be most beneficial and productive. There are a large number of military barracks in the area where a large number of adult population is living as singles. A lot of sexual activity is going around these areas which can be a fertile ground for transmission of HIV / AIDS.

There is also a University in the area. The young adults studying here seem to be aware of the danger of spread of this disease but are not

careful enough to practice safer sex at the moment of excitement when it is at greatest need.

If we refer back and look at the health educational and promotional methods being used in the unit, it emerges that although there are a large number of methods in practice in this unit but little importance is given to mass media. Apart from leaflets mass media is mostly neglected as a method to promote sexual health.

Sexual Health is an area dealing with sensitive issues. People are very touchy about it and don't like to discuss it publicly. One to one methods or small group methods are thought to be most effective. This is true but the author thinks mass media has a role to play to tackle sensitive issues of public importance such as HIV / AIDS. We cannot discuss intimate issues and personnel relations in the mass media but if we undertake proper care and precautions we can deal with these sensitive issues using mass media to create awareness and provide proper information to the public and to set an agenda. TONES (1990).

In the past authorities have misused mass media (print and electronic) to create fear and victim blaming some quarters of the population. This may have produced negative image of this most modern and perhaps most effective method of mass communication amongst the health promotion professionals. I think they should shrug these fears and use this media especially the electronic media where ever feasible and appropriate for the benefit of the field of health promotion and people at large.

As described in the previous pages, the unit author joined was working on wide range of health promotion methods in the field of HIV / AIDS. The data available in the unit suggested that teenagers and young adults are benefiting comparatively less frequently as compared to matured age groups. HIV / AIDS is mainly a sexually transmitted disease but without a cure. At present no vaccine or medicine is available to prevent or cure the disease. The only protection from the disease is celibacy or safer sexual practices. One of the safer sex options is to have sexual relations with a single faithful partner and frequently having a HIV test. If this cannot be practised then there are other options like always using condoms for penetrative anal or vaginal sex. Non-penetrative sexual practises like cuddling, kissing, deep kissing, massaging etc are risk free. Oral sex is thought to be less risky but it is better to use condoms or dental dams. (Family Planning Agency 1993).

Keeping in view the above mentioned information the author was intrigued to take the help from mass media to do my work in the field of HIV / AIDS.

"The mass media are channels of communication to large numbers of people: television, radio, magazines and newspapers, books, displays and exhibitions leaflets and posters are also, mass media when they are used on a 'stand alone' basis as opposed to use as a learning aid in face-to-face communication with an individual or a group". Ewles and Simnett (1992: 243).

"Specialists in the public health field can facilitate educational treatment of complex material by producing clear cut, black - and white guidance information to reporters". Atkin and Arkin (1990: 24).

Mostly individual initiatives and sometimes group initiatives are employed to promote health in the field of HIV / AIDS. Population initiatives used in this key area are leaflets and posters. Other mass media i.e., radio, T.V., cinema etc., were initially used but mostly to arouse fear with little or no information and support. Don't die of ignorance, iceberg campaign on the mass media is classical example of these type of campaigns. Mass media was also used to promote Victorian style of moral values and sex codes. This was to stigmatise and marginalise a particular group practising different sexual outlets. These tactics are not only ineffective and waste of resources but they can also discredit the medium which is used to transmit fear provoking and discriminatory messages.

Considering all this the auther put forward his plans to the unit manager, to use one of the Mass medium i.e., local radio to promote health in the field of HIV / AIDS in the area.

"The challenge for the mass communication industries and the public health community is to make the greatest possible use of mass media to improve the health of the society" Wallack. L (1990: 49).

The author accepted the challenge and will use local radio, to promote sexual health and prevent HIV infection.

Pros and Cons of Mass Media (Local Radio)

The author talked with the manager about the under-utilisation of the health promotional services available in our unit related to HIV/AIDS especially by the teenagers and young adults. The author suggested that we can use the local radio

for raising awareness and drawing the attention of young people as well as the general public. We can also increase their knowledge about HIV / AIDS by using this medium. We can also inform them about the services we provide and how they can utilise them effectively. This can enhance the chances of utilisation of the services and help us to meet the targets of health of the nation more efficiently in our area.

Furthermore HIV / AIDS is different from most of the other sexually transmitted disease and their causative organisms. There is no vaccine or treatment regimen available to-date to prevent or cure this disease. Once HIV is transmitted it definitely leads to the appearance of AIDS.

The only way to prevent transmission of HIV / AIDS is to practice safer sex. We can encourage practice of safer sex skills on a mass medium or local radio by:

- providing information related to risk and risk reduction. The information should be phased and interrelated to other aspects of the issue.
- Projecting appropriate behaviours along with teaching necessary skills for the uptake of behaviours. Bennett and Hodgson (1992)

These are the features of a sophisticated exploitation of mass media in present days for promoting health.

The benefits of using local radio as a method of health promotion in the field of HIV / AIDS particularly in the area author was working are that like other electronic media, radio waves will take the messages to all the corners of the area served by the unit. It will reach the young adults living in the military barracks which are other wise hard to reach, the teenagers through the radios and their tiny ear phones and the general public in the area. Information will reach direct to large number of audience with out any interference or adulteration.

The clients will receive sophisticated messages tailored by the professionals without the so called shame or stigma of attending GUM clinics or special centres providing HIV / AIDS services.

It will also be easier for the unit to communicate with the target population in a short span of time with out employing a large number of trained work force necessary to reach individuals or groups to deliver the goods, i.e. messages leaflets etc.

As mentioned previously the local radio can effectively raise awareness consciousness, knowledge and generate immediate emotional response. All these factors are important to influence climate of public opinion which will favour a socie-tal change, Ewles and Simnett (1992).

The unit manager interested in the authors plans but raised her concerns related to using radio to propagate the sensitive issues like HIV and AIDS.

Her Objections were:

- That radio is a one way communication channel. It is difficult to clarify the messages. Immediate feed back is not available so it is not possible to response to the needs and requirements of the audience, immediately.
- Many researchers have shown that "direct persuasive power of the mass media is very limited" Ewles and Simnett (1992)
- Use of the mass media is very expensive and its cost effectiveness is still doubtful.
- Messages to be delivered on air need to be carefully prepared in consultation with public relation specialists. A single miscued message can ruin the whole campaign. Furthermore some information on HIV / AIDS and its prevention such as use of condoms, safer sex etc., are necessary for the community but other information may be inappropriate or offensive to the wider public i.e., regarding sexual practice and availability of needle exchange schemes. Hodgson and Bennett (1992).

She further argued that messages are relayed regardless to the fact that they are reaching the target audience or not. If at all they reach the target population it is up to the individuals to choose the messages they like and ignore the portions that they think are not relevant to them.

Her major concern was that to be on air with sensitive issues such as HIV / AIDS and sexual practices can produce hue and cry in the traditional quarters of the community and the campaign can back-fire and destroy the reputation of the local health promotion unit. She was also concerned that the effects of the campaign on the local radio will be short-lived.

After her counter arguments we had a further exchange of views.

Conclusions

About her objection that radio is a one way communication channel the author put forward the idea of an interactive radio program. There

will be a phone-in line and audiences will also have a chance to put forwards their point of view and take part in the discussions live on air. They will also be encouraged to ask question on the phone-in line and get clarifications they want regarding to the material presented in the programme. This will also solve the problem of delayed feed back. It will also provide an opportunity for on going need assessment and allow us to be reactive to the needs of our clients immediately.

Regarding her remarks that mass media alone has very little persuasive power. Yes it is true but only if mass media can provide information related to risk and risk reduction, this can create awareness and provide knowledge about the issue of the risk behaviour. We can also introduce skills necessary for the up-take of appropriate behaviour. Awareness can initiate the process of change and once the client is ready for action to change his / her behaviour, it will be a great achievement in itself. After that there are a range of services ready to serve the clients. The radio will also be used for providing information about these services.

Regarding other issues the author assured that he will regularly consult a public relation specialist. The messages will be carefully chosen and exten-sively piloted before they are on air. Sentiments of the public regarding the issues will be given due importance. The parents and guardians and tea-chers etc will also be targeted to soften their atti-tude about sex education in schools. The prog-rammes will be produced by involving people popular amongst the target population speaking their language. Every opportunity will be availed to make these programmes interesting and popu-lar amongst the target audience and their involve-ment in the issues and the programmes will be en-sured.

The manager reluctantly gave me permission to use local radio to deal with the issue of HIV / AIDS for three months after that less frequent programmes will be carried out to reinforce the messages. Whole process will be monitored from the day one and changes will be made where and when necessary.

The author thanked the manager and returned to his office with bubbling ideas in his mind to make the experiment a success and an example for those who need to follow it.

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IMPACT OF COMMUNITY-BASED INTERVENTION ON IMMUNIZATION COVERAGE AGAINST VACCINE-PREVENTABLE DISEASES IN PAKISTAN

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Summary

Methods: Data from 22 units, each a cluster of 500 to 550 households, under village improvement project in four regions of Pakistan, from 1990-1995 are analyzed. Baseline survey of 100% households solicited the health needs. A monthly report generates data on immunization status, and a follow up survey in 1996 measured attitudinal change towards immunization.
Results: The vaccine coverage for all six diseases (48%), BCG (59%), DPT (49%), Polio (49%), and Measles (48%) at baseline, increased to 90, 98, 93, 93, and 90 percent at the end of 1995. No cases of these diseases were reported during past three years. At follow-up, 91.7% women knew childhood infectious diseases could be prevented by immunization, and at 97.3% households, mothers had immunization cards.
Conclusion: Vaccine coverage can be enhanced by community-based health education, providing immunization, and follow-up of families, resulting in decrease in disease burden.

Introduction

Despite significant scientific advances, developing countries still face the problems of poor public health standards. The incidence of communicable disease has declined significantly in developed countries but remains high for developing countries. During 1990, of 16.69 million deaths due to communicable diseases (33.4% of total deaths) recorded globally, 16.1 million (96.5%) were from developing countries[1]. Approximately 14 or 15 million children worldwide under 5 years of age die annually. Eighty percent of deaths are associated with diarrhea, acute respiratory infections, or with measles, tetanus, and malaria. Neonatal tetanus is one of the major problems in many poor areas[2]. It is estimated that, worldwide, 1.5 million deaths due to measles, 700, 000 deaths from neonatal tetanus, and 600,000 deaths attributed to pertussis, are averted by immunization each year[3]. Vaccine preventable diseases accounted for 22%, 13%, and 35%of deaths in Bangladesh, Senegal, and Sierra Leone, respectively[4]. The number of deaths due to vaccine preventable diseases among children has declined substantially, but morbidity remains high.

In 1974, WHO globally launched the Expanded Programme on Immunization (EPI) against Tuberculosis, Diphtheria, Pertussis, Tetanus, Polio, and Measles. In Pakistan, EPI commenced in 1976. WHO passed a resolution "Health for All by the Year 2000" in 1977. In 1988, a conference sponsored by the Task Force for Child Survival proposed to accomplish by the year 2000 : 1) 90% reduction in cases and 95% reduction in mortality due to measles compared to pre-immunization levels; 2) virtual elimination of neonatal tetanus; 3) 50% reduction in maternal mortality, and 50% reduction in infant mortality or to 50 per thousand live births[2]. By 1990, about 80% of children had been vaccinated against these six common childhood diseases[5]. Today, vaccine coverage is still below the proposed target in many developing countries.

Like other developing countries, Pakistan also has high infant and maternal mortality rates, 100 and 300, respectively 6. Of the total population of 140.5 million in Pakistan, 24 million are children under 5 years of age. No precise mortality or morbidity data is available. However, according to the 1995 annual report of the Director General Hea-

lth, the number of Polio, Pertussis, Diphtheria, Tetanus, Measles cases treated at provincial hospitals were 3628, 593, 120, 793, and 973 respectively. In addition, 271 deaths due to neonatal tetanus were also reported[7]. These figures may represent only a portion of the total mortality and morbidity due to under reporting by hospitals and to the fact that a large number of cases seek medical care by private practitioners who seldom report to health authorities. Many measles and polio outbreaks are reported each year. The vaccine coverage rates against six EPI diseases are very low, and only 35% of the children are fully immunized in Pakistan[8].

APPNA SEHAT (Association of Pakistani Physicians of North America Scientific Educational Health Administrative Training), a non-governmental organization, has been implementing low-cost Rural Health Care Projects in four regions, Murree, Mardan, Sahiwal, and Badin, in three of the four provinces of Pakistan since 1989. These locations are wide apart and different both geographically and culturally from each other. These projects with a focus on health education, named 'Village Improvement Projects', have a set of goals and have developed intervention strategies to achieve these goals. One of the major goals of each project is to reduce the morbidity and mortality due to vaccine preventable diseases among children and women of child bearing age.

Methods

We analyzed APPNA SEHAT project data for the years 1990 to 1995. APPNA SEHAT is working by units which is a cluster of 500 to 550 contiguous households in one or more than one village. Each new unit is included in the project after assessing the health needs by conducting a baseline survey of 100% households. The number of units increased from four in 1990 to twenty-two at the end of 1995. At present, thirty-one operational units are served by the project. Five persons who belong to a unit, one senior health assistant (male), two health assistants (females) with a few years of education, and two female traditional birth attendants (TBAs) conduct project interventions in their unit after proper training. Health assistants visit each household once a month, collect information on events that have occurred in the past month, provide health education, identify health problems, and provide immunizations. The senior health assistant provides logistic support and imparts health education among males. TBAs provide prenatal care and also deliver babies. In addition, each unit has an unpaid facilitator (a local respectable figure), one male and two female Village Health Committees comprised of trained volunteers, organized and headed by health assistant of the same gender. The Committees meet at least once a month. The committee members participate in disseminating health messages to other villagers, deciding priorities for health interventions, and acting on these decisions.

The project interventions for immunization which are carried out by health assistants in their unit during monthly home health visits, include:

1. Registration of 100% children of age less than five in the immunization program;
2. Registration of 100% women between 15-45 years of age in the immunization program;
3. Education of all mothers of children under five years of age on the importance of immunizations for themselves and for their children through household visits and/or dissemination of information through women village health committees;
4. Collaboration with government EPI department for vaccines and vaccinations, where required;
5. Immunization of children and women with the help of unit staff and / or with the ckl' collaboration of a government vaccinator.

At the start of study, a baseline house to house survey of 100% households was conducted. Health data from all units were collected and analyzed on a monthly basis. This system has been operational since the inception of the program / study for continuous monitoring and reporting of health events, and analysis of trends over time. The system labeled "Monthly Health Summary" generates data on immunization status along with other project interventions.

The attitudinal change towards immunization was measured by conducting a follow up survey in 1996. A two stage random sample selection process was adopted. At first stage, a random selection of thirty clusters from each fifty-two villages was drawn. The second stage involved random selection of ten households within each cluster. The respondent was the mother with at least one child of age less than five years. The survey was conducted by teams trained in survey methodologies. Each team consisted of one project worker from another area and one local school teacher. A

pretest was conducted in each region before the main survey began. Also, for comparison, a control village adjacent to each of 3 areas (Murree, Mardan, and Sahiwal) was surveyed in December 1994 as part of the evaluation of the project.

This report is based on data from villages which have been in the project for at least one year. It consists of a total population of 75,707 including 10,069 children under 5 years of age and 13,401 women between 15 and 45 years of age (Table 1). Because the baseline data was spread over a period of six years, an aggregated mean of all units was taken for comparison.

Results

All of the population is of low socio-economic status. More than 85% of adult females are illiterate (cannot read or write). Majority of the families are living below the poverty level with average annual income between 5,000 and 14, 000 rupees (US $ 130-350).

The baseline vaccination coverage for each vaccine in the EPI programme ranged from 48% for measles to 59% for BCG. By the end of 1995, the coverage had increased to at least 90% and ranged from 90.0% for measles to 99.0% for Polio I and DPT I (Table 2). The vaccine coverage has almost doubled from baseline figures, and is much higher than the National estimates. The baseline vaccine coverage remained low in each region for the years 1993, 1994, and 1995, whereas the follow up coverage one year after inclusion in the project increased (Table 3).

The follow up survey shows that 91.7% mothers know that childhood diseases can be prevented by immunizations; and at 97.3% households, the mothers had immunization cards for themselves and for their children. For the last three years, no illness from any of these six diseases, in mothers and children under five, has been reported. The annual cost per beneficiary is 72 rupees (less than 2 US $).

Discussion

The vaccine coverage against six EPI diseases substantially increased from baseline survey. Although the baseline coverage in 1992 was only slightly higher as compared with the National estimates in 1995, the coverage in the intervention villages had almost doubled at the end of 1995. High vaccine rates in study areas might represent better vaccination efforts on part of health department and other concerned agencies in those areas. When the data for units added during each year alone were examined, the baseline coverage for 1993, 1994, and 1995 was low in each region except for the unit added in Mardan region in 1994, and one added in Murree region during 1995 (Table 3). The unit added in Mardan had started receiving some services prior to formal inclusion in the project and hence had high baseline vaccine coverage. The high baseline rates for unit added in Murree in 1995 could be the result of a vaccination campaign by the local health department in that area. Also, a survey of neighboring villages in December 1994, revealed low vaccine coverage for those villages (Table 3).

Another possibility is that the National estimates are imprecise and conservative due to incomplete data, a common problem in developing countries[9]. However, such an increase in coverage is not likely to be due to such reasons. Therefore, this large increase in vaccination coverage can be attributed to projects' efforts. Some of the reasons given by mothers for not immunizing their children are: (1) lack of knowledge about immunization, (2) fears of side effects, fear that vaccination is a covert form of family planning or it might result in sterilization, (3) negative opinions about immunization within community, (4) immunization site being too far, poor treatment by health centers' staff, mistrust of government vaccinators, long waiting time at the facility and service rushed[4,10]. This is especially true of the rural areas where majority of the population is poor and uneducated. Increase in mother's knowledge about measles and importance of immunization in its prevention due to health education messages in Karachi, the biggest city of Pakistan[11], stresses the need of continuous efforts towards primary health care.

The World Bank, in World Development Report 1993, has identified problems related to poor health care services in developing countries and recommended solving these to improve overall health care. These recommendations, which also apply to vaccination coverage and achieving other primary health care objectives of Health for All by 2000 in developing countries, include proper training, motivation, and commitment of staff; education of mothers about child immunization and its role in preventing diseases; involvement of the co-mmunities and reduction of negative opinions within the communities; decentralization of health care facilities and involvement of NGOs[1,9].

Each unit in the project was included as necessitated by baseline survey results. The major focus of the activities in the villages was to enhance community involvement in disease prevention and health promotion activities. Support by an influential local figure and recruitment of staff from the same area where they serve, helped allay any fears and negative opinions in the communities and made them receptive to the project interventions. The village health committees were instrumental in getting the health education messages to each household and in augmenting community participation. Another key attribute to the projects' success was hiring female staff who were culturally sensitive and who were able to gain access to households. Since most of the activities emphasized in the projects were related to women, interviewing and education of mothers and females of child bearing age on health issues was made much easier by using female staff members. The project also serves as an exemplary model for collaboration between government agencies (procurement of vaccines, cooperation of government vaccinators) and NGOs (vaccine administration, other health promotion activities). Another salient feature of the project is its low cost, less than $2 annually per capita, compared with the previous estimates of $5 to $10 per child[12].

These methods and findings have implications for future health programs by health departments and other (NGOs) to increase vaccination coverage, and achieve other primary health care objectives. The projects' areas were rural, poor, and had very low literacy rates. Such populations are hard to reach and health behavior change is difficult. Our results show that if programs are designed according to the needs of the area, the population carefully targeted and community members involved, then chances of success are bright.

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