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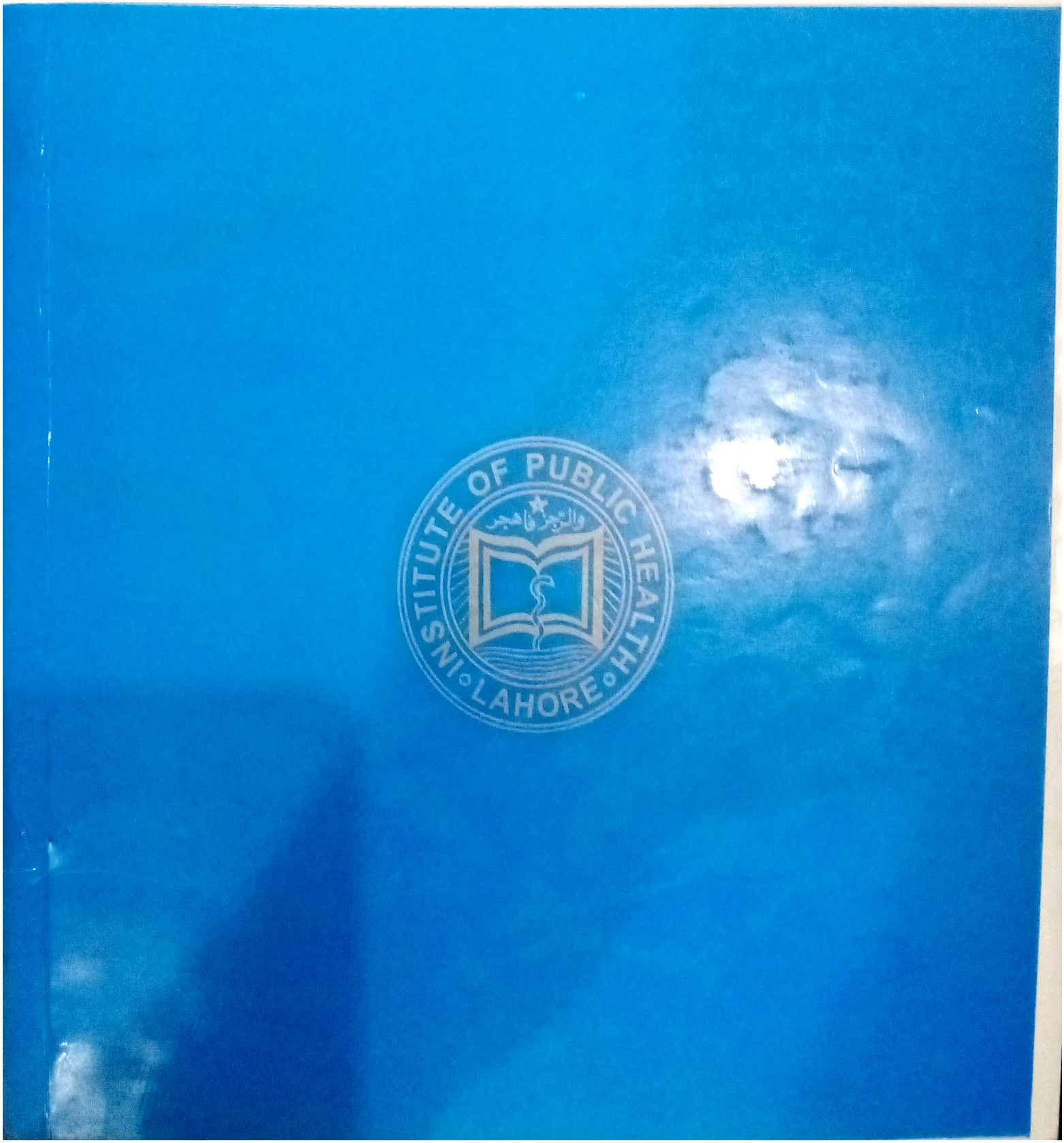

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EDITORIAL

I have received a letter from Dr. Umm-e-Kulsoom of MCH department, Institute of Public Health and I found it most suitable for reproduction as an editorial for this issue. She writes

"SPIRITUAL POLLUTION: *Health is defined by WHO as a "state of complete Physical, Mental and Social well being and not merely absence of disease or infirmity".*

I would like to add to it "spiritual well being" as well because man is not merely the name given to a physical body but also to the Rooh" which gives real life to him.

Many physical, biological, socio-cultural and economic factors are responsible for maintenance of the health equilibrium in the human body. But, do we need only clean air, water and environments free from chemical and other pollutants? I feel that clean environments must include clean hearts, clean thoughts, loving attitudes and sincere relationships between individuals and institutions. In fact it is possible only when there is a pure and clean Rooh in human bodies. A "Rooh" with positive qualities enlightening and purifying its environments, such as love, affection, respectfulness, trustworthiness, credence, confidence, honesty, justice, faithfulness, sincerity, thankfulness, patience, endurance, beneficence, courtesy, kindness, courage, modesty, discipline, generosity and hospitality etc. A Rooh which is free of all those negative qualities polluting its environments, such as, corruption, dishonesty, anger, harshness, hatered, crookedness, jealousy, malice, thanklessness, selfishness, superiority and inferiority complexes, exploitation, vanity, arrogance, confrontation, prejudices, immodesty, greed etc.

The Holy Prophet Mohammad (PBUH) made it clear that our hands and tongues should never be harmful for anybody. It we do so our submission will never be accepted.

Man is appointed and placed as "viceroy in the earth" by the creator of the universe (Quran 2.30). He was told by the operating authority that "All that is in the earth has been created for him". (Quran 2:29). He was further told: "See ye not how Allah hath made serviceable unto you what

so ever is in heavens and what so ever is in the earth hath loaded you with His favour both without and within". (Quran 31:20).

Man has been given the essential knowledge to get best benefit of the things created for him and also to perform his duties as viceroy in the best way. (2:31).

To do so he "was taught what he knew not" (96:5). He was given hearing and sight and heart (32:9) and was taught utterance (55.4) so that he can see, observe, listen, think and decide and take action. However all of his actions are being recorded and on the day of judgment will be presented before the Almighty Allah who will decide about their virtue.

Thus, man is the most respectable and honorable creature on the earth being served by all the things in his environment. It is his right to get rid of all the pollutants around him, so that he can live a safe, conferrable and contented life.

Intensive and sincere efforts should be done to identify moral and spiritual pollutants in the environment. All of the policies and programmes should be reviewed and evaluated on the criteria that they do not cause or add to the spiritual, moral or physical pollution.

Comprehensive research should be undertaken to more fully understand the health hazards caused by different pollutants in our environment.

Moral suasion, leadership, social sanction and economical, legal and regulatory instruments of change, all with their various strengths and limitations will have to be applied to bring about a hierarchy of value, knowledge, institutional change and technical innovates. Two key value changes are restoration of the conservation ethic through Qana'at, honesty and thankfulness and a revival of the community spirit i.e. Haqooq ul Ibaad through love, affection, respectfulness, courtesy, sincerity and kindness.

Intensive and sincere efforts should be made to identify moral and spiritual pollutants in the environments. All of the policies, programmes and actions should be reviewed and evaluated on the criteria that they don't cause or add to the spiritual, moral or physical pollution"".

MATERNAL KNOWLEDGE REGARDING ACUTE RESPIRATORY TRACT INFECTIONS IN AN URBAN SLUM OF LAHORE

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Summary

Acute respiratory tract infections (ARI) are responsible for 26.5% of all deaths under five years of age in Pakistan. To determine the knowledge of the mothers regarding management of acute respiratory tract infections, 256 randomly selected mothers, having at least one child below 5 years of age, were interviewed in an urban slum of Lahore. 75% children were suffering from ARI at the time of interview. 25% children had suffered during the last two months preceding the interview but were free from any symptom of ARI at the time of interview. The symptoms identified by the mothers, during the last episode of ARI in their youngest child, included cough in 85.9%, running nose in 75.0%, fever in 43.4%, blocked nose in 20.3%, sore throat in 20.7%, difficulty in breathing in 10.5%, whistling in 3.5%, earache in 1.6% and ear discharge in 0.8% children. In 91.4% cases the illness of ARI was first recognized by the mother herself. 54.5% and 76.6% mothers considered cough and fever as dangerous symptoms, respectively. The main causes of ARI as described by the mothers included "exposure to cold" by 68.4% and "intake of sour or cold food" by 35.9%, "after bathing" by 5.9%, "due to germs" by 5.0%, "evil eye" 3.1% and "change of weather" by 3.9% mothers did not know about any cause of ARI. 206 (80.5%) mothers said that treatment from a qualified doctor should be started at the beginning of the disease.

Introduction

In Pakistan Acute Respiratory Tract Infection (ARI) is considered as one of the major killer disease of children. A survey showed that ARI (Pneumonia) killed 160,000 children in a year. Pakistani children on an average have 4-6 episodes of ARI in a year. 33.6% of total admissions are for ARI and 26.5% of all deaths under 5 years in the community were attributed to ARI[1]. Statistics show that 9.4% of all hospital deaths are due to ARI and 26.5% of all deaths under five years of age in the community are attributed to ARI. Regarding the morbidity statistics, studies in different hospitals in Pakistan have shown that more than one third case load in the children out patient department[1] is due to ARI. The admissions of ARI patients range from 11-30% of the total admissions in the paediatric units[2]. The data of Children Hospital, Pakistan Institute of Medical Sciences, Islamabad, for the period October 1988-October 1989, showed that 26.32% of the total OPD patients below 5 years of age had ARI, 55% of these patients were below 12 months of age. 80.5% had mild ARI, 18.7% moderate ARI and 0.6% severe ARI. 81.2% had Upper Respiratory Tract Infection[3].

According to Health Management Information System, Health Department, Government of the Punjab Annual Report in Punjab Province during the year 1995, 29.8% of all children below 5 years presenting at first level care facilities were suffering from ARI while for the year 1996 the figure was 28.8%[4,5].

A number of risk factors have been shown to contribute to high mortality from ARI. These include low birth weight, malnutrition, anaemia, and poor accessibility to adequate treatment facilities including supplies of antibiotics and other drugs[6]. Proper recognition of danger signs of Acute Respiratory Infection by mothers and care-

1 c

takers of children is essential for motivating them to take appropriate action for its management. The health care seeking process is mainly dependent upon the knowledge of the mothers / caretakers.

This study was conducted to assess the knowledge of mothers regarding causation of ARI and to know the culture specific signs and symptoms used for its recognition.

Methodology

The study was conducted in Gulbahar Colony, an urban slum situated in Lahore Cantt. The area was provided health care by community based Family Health Complex (FHC) Project, an out reach project of the Institute of Public Health, Lahore. The study conducted was an interview based cross-sectional, community based, descriptive study. The study population consisted of the mothers, having at least one child aged less than 5 years with the symptoms of ARI at the time of interview or had suffered from ARI during the preceding 2 months period. Sample size was calculated with the help of computer programme Epi Info 6. In the absence of availability of studies with the comparable data expected frequency was presumed to be 50% (to ensure the maximum sample size for the given population). Taking worst acceptable as 44% at a confidence limit of 95%, sample size estimated was 256[7].

The area map with house numbers of Gulbahar colony was available at Family Health Complex Project of Institute of Public Health, Lahore which was used to draw a sample of 256 houses with the help of simple random number table[8]. A semistructured data collection instrument based on open and close ended questions was designed to collect data about knowledge and practices of mothers regarding ARI. The questionnaire used was pre-tested and necessary changes were made. A total of 256 mothers were interviewed. Four lady health visitors (LHV), who were the regular staff of the FHC Project and well accepted in the community collected the data. They were thoroughly trained by the authors to decrease the inter-observer and intra-observer variability. A data entry programme was developed on Epi Info 6, a Word Processing, Database and Statistics Program for Public Health and all the data was entered in the computer. The data was cleaned and final analysis was performed with the help of the same computer software.

Results

Mother's Background

In this study a total of 256 mothers were interviewed who had at least one child below 5 years of age and at least one of these children was suffering from ARI at the time of survey or suffered from ARI in the preceding two months. Among theses mothers 210 (82.0%) were below 35 years of age. The average age of mothers was 28.5 years. 144 (56.3%) mothers were illiterate and out of 112 (43.7%) literate mothers, 49 (43.6%) had educational level of primary or below, 41 (36.6%) were middle or matric and 22 (19.6%) were intermediate or above. Only 39 (15.2%) mothers were involved in economically productive occupations. Husbands of 210 (82%) women interviewed were below the age of 40 years. The average age of the husbands was 32.8 years (SD 6.7). Among the husbands 70 (27.3%) were illiterate and out of 186 (72.7%) literate husbands, 58 (31.2%) had educational level of primary or below, 89 (47.8%) were middle or matric and 39 (20.9%) had Intermediate or above qualification. Two husbands were jobless at the time of interview while remaining 254 were involved in various occupations including 53 (20.7%) employees of various government and private organisations, 50 (19.5%) labourers, 43 (16.8%) businessmen, 23 (9.0%) factory workers, 16 (6.3%) drivers, 17 (6.6%) gardeners, 52 (20.3%) skilled workers including carpenters, plumbers, motor mechanics, electricians, painters and tailors. 139 (54.3%) mothers belonged to the nuclear

Table 1: *Mothers Background Information (n=256)*

Average age of mothers	28.5 years
Literate mothers	43.7%
Mothers in economically productive occupation	15.2%
Average age of husbands	32.8 years
Literate husbands	72.7%
Average family size	7.5 persons
Average number of children per mother	3.3 children
Average total family income	5165.8 Rs.
Average income per capita per month	723.68 Rs.

families with an average family size of 7.5 (SD 3.37). The average number of children per mother was 3.3 (SD 1.89). The average total family income was Rs. 5165.8 (SD 3683.58). The average income per capita per month was Rs 723.68 (SD 461.38) (Table 1).

Knowledge Of Mothers Regarding Ari

According to the mother's knowledge regarding ARI, among the total of 256 youngest children, 89 (34.5%) were suffering from ARI at the time of interview, while 103 (40.2%) had been suffering since last two months and 64 (25%) suffered from ARI during last 2 months prior to the interview and were free of the symptoms at the time of the interview. The number of ARI episodes in the last two months as stated by the mothers varied from 1 to 6 episodes. 173 (67.6%) children suffered from one episode of ARI, 56 (21.9%) children suffered from 2-3 episodes of ARI and 27 (10.5%) had 4 or more episodes of ARI. In 234 (91.4%) cases the illness (ARI) was first recognised by the mother herself while in 22 (8.6%) cases illness was first recognised by the other family members including husbands, mothers in-law, fathers in-law.

During the last episodes in their youngest child the symptoms of ARI identified by the mothers included cough in 220 (85.9%), running nose in 192 (75.0%), fever in 111 (43.4%), blocked nose in 52 (20.3%), sore throat in 53 (20.7%), difficulty in breathing in 27 (10.5%), whistling in 9 (3.5%), earache in 4 (1.6%) and ear discharge in 2 (0.8%) children (Table 2).

Table 2: *Frequency Distribution of Symptoms of ARI as Seen in the Last Episode in the Youngest Child, Gulbahar Colony, Lahore (n = 256)*

Symptoms of ARI	Frequency	Percentage
Cough	220	85.9%
Running Nose	192	75.0%
Fever	111	43.4%
Sore throat	53	20.7%
Blocked Nose	52	20.3%
Difficult Breathing	27	10.5%
Whistling	9	3.5%
Earache	4	1.6%
Ear discharge	2	0.8%

Regarding the perceived seriousness of a symptom 120 (54.5%) mothers considered cough as a dangerous symptom while 85 (76.6%) mothers considered fever as dangerous among the mothers whose youngest child had the related symptom in the last episode. Similarly, for the symptom of "difficult breathing" 26 (96.3%) mothers considered it a danger sign of disease and 9 (100%) mothers labelled "whistling" as a dangerous sign (Table 3).

Table 3: *Frequency Distribution of Symptoms of ARI being Dangerous and not Dangerous as Perceived by Mothers during Last Episode of ARI in their Youngest Child, Gulbahar Colony, Lahore*

Symptoms of ARI	Total Obs.	Dangerous		Not Dangerous	
		Frequency	Percentage	Frequency	Percentage
Cough	220	120	54.5%	100	45.5%
Running Nose	192	102	53.1%	90	46.9%
Fever	111	85	76.6%	26	23.4%
Sore throat	53	36	67.9%	17	32.1%
Blocked Nose	52	25	48.0%	27	52.0%
Difficult Breathing	27	26	96.3%	1	3.7%
Whistling	9	9	100.0%	0	0.0%
Earache	4	4	100.0%	0	0.0%
Ear discharge	2	2	100.0%	0	0.0%

The main causes of ARI as described by the mothers included "exposure to cold" by 175 (68.4%), "Intake of sour or cold food" by 92 (35.9%), "After Bathing" by 15 (5.9%), "Due to germs" by 13 (5.0%), "evil eye" by 8 (3.1%) and "change of weather" by 5 (2.0%) mothers. 3 (1.2%) mothers said that they do not know about any cause of ARI (Table 4)

Table 4: *Frequency Distribution of Causes of ARI as Perceived by the Mothers, Gulbahar Colony, Lahore (n = 256)*

Causes of ARI	Frequency	Percentage
Exposure to cold	175	68.4%
Intake of sour / cold food	92	35.9%
After Bathing	15	5.9%
Due to germs	13	5.1%
Evil eye	8	3.1%
Change of weather	5	2.0%
Teeth eruption	3	1.2%
Dusty atmosphere	3	1.2%
Do not know	3	1.2%
Measles	1	0.4%
Congested house	1	0.4%
After eating biscuits	1	0.4%

When asked about the appropriate time to get treatment from a qualified doctor, 206 (80.5%) mothers said that treatment from a qualified doctor should be started at the beginning of the disease, while 28 (10.9%) mothers considered that consultation from a qualified medical practitioner should be sought after trying some other treatment for the disease. 24 (9.4%) mothers believed that doctor should be consulted only when the illness is severe, 1 (0.39%) mother said that she would seek such treatment when they have the money to pay the fee and 1 (0.39%) mother said she would never like to go to a qualified doctor.

Discussion

Mothers are first health care providers for their children, however their ability to perform this function efficiently depend upon a number of factors. Perception of the mothers regarding the severity of the disease is dependent upon their knowledge and beliefs which is the main driving force for managing diseases in their children and seeking medical consultations.

In different studies mothers were usually found to be able to recognise a number of signs and symptoms associated with ARI, but in different communities mothers gave varying importance to various signs of ARI for seeking medical care. In the study under discussion, difficult breathing and whistling were rightly considered as dangerous symptoms by 96.3% and 100% of the mothers, whose children had these symptoms in the last episode. This finding was similar to the finding of a study in Ghana, where dyspnoea, tachypnoea and chest retraction were considered important for not delaying access to a health care centre as compared to cough, fever and lethargy[9]. (Denno 1994). Similar results were observed in a Gambian study where mothers considered difficult breathing or systemic upset as an indicator of severe illness in a coughing child (Campbell, Byass and Greenwood 1986). Regarding the other symptoms of ARI, a much larger proportion of mothers considered fever and sore throat as dangerous symptoms as compared to cough and running or blocked nose. This finding was similar to the findings in a number of studies conducted in Gambia, Uruguay, Egypt, Bolivia and Indonesia, where fast breathing, fever and cough were considered more important, with varying relative importance[11,12,13,14] (Campbell et al 1990, Hortal 1992, Khalaf 1992, Kresno et al 1994). However in our culture children are wrapped heavily in winter particularly when they have respiratory symptoms, which increase the chance of missing the respiratory signs and symptoms[15] (Kundi et al 1992). So in these circumstances a study in which examination of the diseased child is done both by physician and mother is recommended to evaluate the concurrence between both the groups.

Once the presence and severity of the disease was assessed by mother, the decision of management by home remedy or consultation by a health care provider depend upon a number of factors like mother's perceived dangerousness of the symptoms, socio-cultural background and economic condition of the family, but one important factor was the knowledge of the mother regarding causes of the disease. In the study under discussion, mothers had poor understanding of the etiology of ARI because only 5% of the mothers attributed the causation of ARI to germs. Similar

findings were found in the study conducted in urban Ghanaian population, in which only 5% of the mothers labelled origin of ARI as germ based[9] (Denno 1994). Other causes of ARI as mentioned by mothers include "exposure to cold" 68.4% and "intake of sour and cold food" 35.9%. Kresno in his study in rural Indonesia also stated similar findings that the most commonly perceived cause for ARI in children was air entering the body through some type of chill, exposure to draught or breeze or change of weather [14] (Kresno et al 1994). Similar findings have also been found in a Nigerian study in which the causes of ARI as perceived by the mother included cold water, heredity, poor hygiene, exposure to smoke and dust and supernatural force[16] (Oyejide & Oke 1995). The evidence of mother's perception of the supernatural forces causing ARI also exists in the study under discussion where 3.1% of the mothers related ARI with evil eye. Similar findings were observed in a study conducted in Matlab Bangladesh which also highlighted the association of pneumonia and similar illnesses with evil influences[17] (Stewart et al 1994). This shows that similar beliefs regarding causation of ARI exists among the mothers of the developing countries. In the study under discussion poor maternal understanding of ARI may be related to poor educational status of the mothers. But as has been studied in India literacy alone may not be the only factor responsible[18]. (Khan et al 1995)

Although majority of the mothers would like to get treatment from a qualified medical professional from the beginning of the ARI in their children but 20.3% mothers did not consider that treatment for ARI should be sought from qualified doctor at the beginning of the disease. This is an alarming situation and indicate requirement of health education for improved health seeking behaviour.

On the basis of this study we can safely conclude that keeping in view the relative prevalence of each symptom mothers were generally well aware of the symptoms associated with ARI and could appreciate the severity of more dangerous symptoms correctly. However the concept about the causation of ARI was very vague and very few mothers could correctly assign it to the germs, while majority assigned it to cold weather / food etc.

In view of the above findings initiation of a well planned and intensive health education campaign, involving both health care facility based and community based approaches, is recommended to improve the management and health care seeking behaviour of mothers regarding ARI in their children. The message should emphasise on the role of germs in the causation of disease; advantage of early and correct detection of dangerous signs and symptoms of ARI; and importance of getting treatment from qualified doctors from beginning of the disease.

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ANTENATAL CARE AUDIT BASED UPON CONCURRENT OBSERVATIONS OF SERVICES RENDERED BY LADY HEALTH VISITORS

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Observational study to assess the antenatel care provided by LHVs. All the LHVs were observed and the findings were recorded on a specially designed questionnaire. Analysis of results revealed that antenatel care was far below the required standard.

Introduction

In Pakistan a large proportion of women in reproductive age suffer due to causes related to pregnancy and childbirth. Maternal mortality is one of the leading causes of death among women of reproductive age in the developing world. The main causes of maternal deaths are haemorrhage, infection, toxaemia(hypertensive disorders) and obstructed labour(Akhter 1984). Studies have shown that the factors that contribute to maintaining high maternal mortality in the developing countries include the relatively large number of pregnancies among women at the extremes of the child bearing range, maternal depletion through pregnancies that are too closely spaced and the high prevalence of high-parity births. The risk of deaths related to pregnancy is further exacerbated if women are poor, malnourished, uneducated or beyond the reach of adequate health care(Royston and Armstrong 1989).

On the basis of data tabulated by WHO, it has been estimated that each year more than 200 million women get pregnant world-wide, at least half a million of them die from causes related to pregnancy and child birth, *i.e.*, roughly one women is dying every minute from such causes(WHO 1994). In Pakistan maternal mortality is estimated to be 340/10,000, or it can be postulated that after every 20 minutes one women is loosing her life due to pregnancy and child birth related causes(UNICEF 1997).

Approximately 90% of maternal deaths and a considerable load of maternal morbidity can be avoided by a single intervention *i.e.*, antenatal care(Arkutu 1995). Antenatel care is the complete health supervision of the pregnant women in order to maintain, protect, and promote the health and well being of mother, the foetus and the new-born infant. Observation, examination and counselling of the expectant mother should begin early in the pregnancy and continue at appropriate intervals until after the birth of infant and for a reasonable length of time into the post-partum period. The pregnancies of women who have early and continuous antenatel care of good quality results in a lower incidence of prematurely born infant and peri-natal mortality besides reducing the chances of maternal disease and death (Bang *et al.* 1989). Thus the quality of antenatel care may determine to a large extent the outcome of pregnancy in regard to the health of both the mother and her child(Mallet 1991).

Quality assurance or clinical audit is about setting standards and monitoring performance against these standards, and in accordance with clinical guidelines (Elder and Ronen 1995)[1]. Quality of antenatal services in developing countries is often impeded by factors such as poorly trained personnel, limited financial resources and poor workers moral (Zeitz *et al.* 1993).

The responsibility of providing antenatal service is shared by many cadres of health professionals *i.e.*, doctors, LHVs, Lady Health Workers(LHWs) and TBAs. LHVs play a pivotal role in the provision of antenatal services. It looks quite reasonable and appealing that working of LHV should be thoroughly scrutinised so that quality of care provided by her is assessed.

1. Clinical guidelines are systematically developed statements which assist in decision making about appropriate health care for specific clinical conditions.

Methodology

The study was a cross sectional observational study, Tehsil Attock being the study area. District Attock is one of two districts in Punjab where Health Management Information System (HMIS) for the First Level Care Facilities (FLCF) is functioning since 1992 and is fully developed. The mother and child cards have been provided to all LHVs working in RHCs, BHUs and MCH centres.

There are three MCH centres staffed with LHVs, and out of 16 BHUs, LHVs were posted in 13 only. Hence performance of 16 LHVs were studied. Study tools included specially designed questionnaire. Data was collected by concurrent observation of the working of LHVs according to the parameters and recorded on a check-list. Parameters selected were the same as outline in the HMIS manual. These parameters are categorised according to the trimesters of pregnancy. During the first trimester it is desired that the pre-existing problems are ruled out; problems appearing due to pregnancy are focused during the 2nd trimester. In the 3rd trimester, screening helps in pelvic assessment and in decision regarding mode of delivery.

Observations and Findings

Following observations were recorded;

Table 1 *Observations in the First Trimester*

Standard	Observation by LHV	Not Observed by LHV	% Observed
Medical History	04	12	25
Obs History	15	01	94
Height	06	10	38
Weight	15	01	94
B. P. and Pulse	12	04	75
Oedema Feet	02	14	13
Anaemia	14	02	88
Advice on Blood Grouping and Rh factor	01	15	06
Advice on Urine RE	01	15	06

Table-1 shows that during the 1st trimester LHVs paid more attention to recording of obstetrical history and weight (94%); assessment of anaemia was done by 88% of LHVs and BP and pulse were recorded by 75%. The neglected parameters were-advice on blood grouping and Rh factor and urine R/E (6%), and oedema feet (13%). Medium attention was given to assessment of height (38%).

Table-2 depicts that during the 2nd trimester all LHVs recorded fundal height; weight and anaemia were assessed by 94% and BP recorded by 81%. Advice on TT immunisation was done by 75% of LHVs and advice for blood examination was given by 44%. Only 6% of LHVs gave advice regarding urine R/E and 13% did assessment of position of the foetus.

Table-3 shows recording of performance of LHVs during third trimester. All LHVs assessed anaemia and fundal height; 94% recorded BP. Weight recording and assessment of oedema feet was done by 44%. Foetal heart rate and foetal body movements were recorded by 54% while position of foetus was assessed by 25%. Not a single LHV gave advice about family planning, breast feeding and care of nipples; no LHV performed pelvic assessment (actually pelvic assessment during the third trimester is supposed to be performed by the WMO).

Table 2 *Observations in Second Trimester*

Standard	Observation by LHV	Not Observed by LHV	% Observed
Weight	15	01	94
Blood Pressure	43	03	81
Anaemia	15	01	94
Oedema Feet	03	13	19
FHR and FBM	07	09	44
Fundal Height	16	16	100
Position of Foetus	02	09	44
Tetanus Toxoid Inj	12	04	75
Advice on Blood Exam	07	09	44
Advice on Urine RE	01	15	06

Table 3 *Observations in Third Trimester*

Standard	Observation by LHV	Not Observed by LHV	% Observed
Weight	07	09	44
Blood Pressure	15	01	94
Anaemia	16	16	100
Oedema Feet	07	09	44
Fundal Height	16	16	100
FHR and FBM	09	07	54
Position of Foetus	04	12	25
Pelvic assessment	-	16	-
Advice on Child Care B. F and Care of Nipples	-	16	-
Advice on complete Blood Picture	09	07	56
Advice on Urine RE	01	15	06

Discussion

Parameters were set in each trimester with the aim of providing antenatal care in accordance with different imminent problems during the progressing periods of pregnancy. Results of the study show that most of the parameters did not meet the required standard.

In the first trimester, aim of the antenatel care is to assess the health and nutritional status of mother and to rule out pre-existing medical problems. Therefore medical history is very important during this trimester, but only 25% of LHVs recorded it. Similarly complete examinations of blood and urine are very significant during this trimester, but only 25% of

LHVs advised for blood test and 06% for urine examination. Recording of obstetric history and weight were near to the 100% standard, and 75% of LHVs recorded BP and pulse.

Aims of 2nd trimester is detection and prevention of problems appearing due to pregnancy itself and to assess progress of pregnancy. Fundal height is a determinant of the progress of pregnancy and was recorded by 100% of LHVs. Tetanus immunisation is very important in this trimester to prevent tetanus neonatum, 75% of LHVs advised regarding this. Early detection of hypertensive disorders of pregnancy is very important and recording of BP, examination of oedema feet and R/E urine help in this regard; these parameters were recorded in the percentages of 81, 19 and 06 respectively.

In the 3rd trimester aim is to assess progress of pregnancy and check malpositions and malpresentations to decide about the mode of delivery; 25% of LHVs fully considered these aspects. This is also the best time to give advice regarding family planning, breast feeding and baby care, as the mothers are very receptive, but it is evident that no LHV availed this opportunity. Foetal heart rate and foetal body movement are indicators of foetal distress; 54% of LHVs recorded these.

Analysing the findings of study indicates that the quality of antenatel care services in the study population is very low. It can be assumed that the reasons of this low quality care are:

- deficient basic training of LHVs in the Public Health Nursing Schools;
- lack of in-service training and on job supportive supervision;
- low job satisfaction resulting from poor morale and lack of motivation.

Recommendations

1. The training curriculum of Public Health Nursing Schools be scrutinised and revised to accommodate issues like quality of care and due importance given to enhancement of knowledge and skills regarding antenatel care.
2. Supportive supervision is provided to the LHVs working in the periphery. WMOs working at RHCs should be made mobile and their job description should include supervision of LHVs working at BHUs. Managerial and supervisory skills of Assistant Inspectress of Health Services(AIHS) posted at each district should be enhanced.
3. Srengthening of MCH directorate at the office Director General Health Services and development of its linkages with district MCH services.
4. A comprehensive system of in-service training evolved for the field health workers.
5. Poor working conditions of LHVs should be addressed and a performance based incentives package should be introduced.

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CURRENT PRACTICES OF RADIATION PROTECTION IN TEACHING HOSPITALS OF LAHORE A COMPARATIVE STUDY OF SERVICES & MAYO HOSPITAL

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Summary

This study was conducted in the main radiology departments of Mayo and Services Hospitals, Lahore. A check list was used to observe the radiation protection measures being practiced in the two hospitals. All the radiographers of the two departments were interviewed, using a structured questionnaire, to assess the practice of radiation protection measures. The score of check list and responses from the all the radiographers were analyzed manually. Results of this study indicate that current standards of the practice of radiation protection measures of Mayo Hospital are better than the Services Hospital but still are not up to the recommended standards. Both hospitals need improvements in the practice of radiation protection measures.

Introduction

The radiological examination is important and integral part of investigations to arrive at a diagnosis in various medical disciplines. Radiology accounts for 6-10% of the health care expenditure[1]. Radiation Health hazards are one of public health problems in Pakistan and other developing countries, which have been ignored and not considered seriously. Although International Commission For Radiation Protection (ICRP)[2] and Nuclear Safety and Radiation Protection Wing of Atomic Energy Commission of Pakistan have formulated the radiation control programmes, but these are not properly followed either due to lack of knowledge of the subject or due to lack of funds or due to long-term delayed somatic and genetic effects of the ionizing radiation. Therefore, the subject is important from the public health point of view.

In Pakistan, the projected annual demand of x- ray technicians for the year 2,000 is 236, while the estimates for x-ray technicians graduating in 1990 was 109[3]. These x-ray technicians are being trained in the 22 training institutions[4]. In our hospitals, due to lack of adequate knowledge about radiation hazards, proper radiation protection measures are not adopted by the radiographers. Therefore, analysis of current status of radiation protection among radiographers and recommendation for its improvement are important. So the aims and objectives of the study are:

1. To assess the radiation protection measures being practiced in Mayo and Services hospitals Lahore.
2. To compare the radiation protection measures being practiced in Mayo and Services hospitals Lahore to the generally acceptable standards.
3. To identify the areas where there are deficiencies or deviations from the standards.
4. To make recommendations to achieve satisfactory protection from x-radiation in diagnostic Radiology Department.

Methodology

This study was conducted in the Main Radiology Department of Mayo and Services Hospital, Lahore. All the Radiographers working in the main Radiology Departments of Mayo and Services Hospital, Lahore comprised the study population. This study was an evaluation research, which involves looking at some system or practice which already exists[5]. Evaluation itself is a

systematic way of learning from experience so as to improve current activities and promote further learning[6]. The methodology of the study was as follows:

1. A check list was developed on the basis of generally acceptable standards of radiation protection measures.
2. The place of study visited to observe the practice of radiation protection measures.
3. A questionnaire was developed about the practice of radiation protection measures.

Data Collection

The study was conducted in the month of July, 1995 in the main radiology departments of Mayo and Services Hospitals, Lahore. The check list was filled by observing the practice of radiation protection measures at the place of study. Each question in checklist was given a score according to its benefits in radiation protection. In this way total score of Mayo and Services Hospitals was calculated separately. Then grading of the hospital was done according to the score achieved by adoption of protective measures against radiation.

Data Analysis

1. Hospital with score of less than 14 was deemed to have unsatisfactory protection measures.
2. Hospital with score from 15-20 was deemed to have satisfactory protection measures.
3. Hospital whose score is from 21 to 28 was deemed to have good protection measures. Simple table and Bar Charts were prepared according to the score secured in the check list by the Mayo & Services Hospitals (Table-1) and then the results were compared.

Similarly, each question in the questionnaire was given a score according to its benefits in radiation protection. The questionnaire was distributed among the all radiographers of the Mayo and Services Hospitals. In this way total score of each individual radiographer was calculated. On the basis of this score, the radiographers in each hospital were grouped in three categories.

1. Those whose score was upto 4 had unsatisfactory practice of radiation protection measures.
2. Those whose score was from 5 to 8 had satisfactory practice of radiation measures.
3. Those whose score was from 9 to 12 had good practice of radiation protection measures.

The frequency distribution graphs of the radiographers according to score achieved by using protective measures were prepared for Mayo and Services Hospitals and then results were compared (Table 2).

Results and Discussion

Practice Of Radiation Protection Measures In Mayo Hospital, Lahore.

During the visit of the main radiology department of Mayo Hospital, observations were made during the X-ray exposure; personal interviews were taken of the radiographer, the patient and their attendants. Matters of radiation protection were also discussed with the teaching staff of King Edward Medical College, radiologists and medical officer of the department. Main X-ray department was inspected keeping in mind the principles of the radiation protection. Main observations were as follows:

1. Building: Main radiology department is located on the ground floor between Albert Victor Hospital (AVH) and the cardiology department.
   There is a small waiting room in the verandah in front of a room which is very busy. Here X-ray chest are taken which comprises about 70% of the total X-rays done in a day. This room is small as compared to other X-ray rooms; and is not spacious as regards the work load it has.
   There is no proper waiting room and patient and their attendants were liable to be exposed from scattered radiations during exposure in two rooms The height of all the rooms is about 16 feet and length and breadth of each room is sufficient to meet the minimum standards. The thickness of the walls in about 26 inches. There is no lead lining on the walls and doors; but the thickness of the walls compensate the absence of lead lining. As for lead lining of the walls is concerned, there is only one hospital in Lahore which has lead lining in the radiology department i.e. WAPDA Hospital, Ferozepur Road, Lahore. Although it is an expensive project but it is

ideal as far radiation protection is concerned. It will protect the other medical personnel, patients and their attendants in the nearby vicinity.

Verandah is on the one side of the building, while the other side has open space which has the advantage that there is no traffic of the general public. In short, the building of main radiology department of Mayo Hospital is near to the minimum standard but it is not ideal one.

2. All X-ray machines are 500 ma except one which is a 300 ma.
3. During exposure of X-ray, no attendants were present in the rooms except in one room .
4. Control console of each machine is in the same room which is not ideally required. However the distance of console from the machine was about five feet which is the minimum requirement.
5. Protective lead screens were present in each room.
6. Warning Sign boards were displayed on the walls and doors indicating the danger of radiation.
7. During exposure of X-ray, it was observed that 4 radiographers had good practice of radiation protection measures, while 5 had satisfactory and 5 had unsatisfactory results.
8. Personal interviews with the patients and their attendants relieved that they had no knowledge about the dangers of radiation. In fact some considered it to be therapeutic in nature.
9. There was no check on the unnecessary X-ray as any person could had X-ray on payment of Rs.15/- only.
10. Film Badges and lead aprons were used by the radiographers working in the fluoroscopic rooms.
11. Number of repeat X-ray was less than five per day.
12. Dark rooms were more or less properly maintained and automatic processor is in operation.
13. No pocket dosimeter was available in the department.
14. Medical officer of the department had adequate knowledge about the radiation protection and they usually supervised the working of the radiographers.

Table 1: *Score Secured by Mayo and Services Hospitals*

S. No.	Hospital	Total Score	Score Secured	Percentage
1.	Mayo	28	20	71.43%
2.	Services	28	12	43%

X^2 = 4.67 (d.f = 1) ; p = 0.03

Table 1 shows the score achieved by the Mayo Hospital and Services Hospitals according to the Checklist. It is clear from the results that main radiology department of Mayo Hospital had significantly better practice of radiation protection measures then Services Hospital.

Table 2: *Score Achieved by the Radiographers of Mayo Hospital According to the Questionnaire, Total No. of Radiographer = 14.*

S. No.	No. of Radiographers	Score Achieved	Percentage
1.	4	9 to 12 (Good)	28.57%
2.	5	5 to 8 (Satisfactory)	35.78%
3.	5	1 to 4 (Unsatisfactory)	35.7%

Ractice Of Radiation Protection Measures In Services Hospital Lahore

Main radiology department of Services Hospital is situated in the first floor of the main building. During my visit to this department following things were observed keeping in mind the general principles of radiation protection.

1. *Building:* The height of the rooms is about 16 feet, while thickness of the walls is about 16 inches. The length and breadth of the rooms were adequate. There is a central corridor which is used as a waiting room. In front of the main entrance, there is a verandah which is also used as waiting room. No proper waiting room is present. The walls and doors had no lead lining. The patient and their attendants sitting in the corridor were exposed

during exposure to scattered radiation. As department is situated in the first floor, the verandah is on the one side of the department which has the advantage that there is less chance of scattered radiation exposure to general public.

In short, as regards the general principals of radiation protection are concerned, the main radiology department of services hospital provide less protection to the patients, and their attendants because people sitting in the central corridor are exposed to scattered radiation from both sides.

2. There were three X-ray machines apart from a fluoroscopic unit (image intensifier). Two machines were 500 ma and one was 100 ma.
3. During exposure of X-ray, attendants of the patients were present in the rooms.
4. Protective lead screens were present in front of the control consoles in each room.
5. Control console of each X-ray machine was present in the same room which is not ideally required. However the distance of console from each machine was about 5 feet which is the minimum requirement.
6. Warning sign boards were not displayed on the walls and doors.
7. Film badges were not available in the department.
8. There was only one lead apron which was used by the radiologist during fluoroscopy.
9. There was no check on the unnecessary X-rays. Same was the case with the protocol patients.
10. Dark rooms were more or less properly maintained and there was no automatic processor.
11. Number of repeat X-rays was more than five in a day.
12. No pocket dosimeter was available.
13. During exposure of X-ray, it was observed that only one radiographer showed good practice of radiation protection measures, while 3 had satisfactory and 6 had unsatisfactory results.
14. Personal interviews with the patients and their attendants revealed poor knowledge about the dangers of radiation.
15. Radiologists of the department used to check the working of radiographers off and on.

It is worth noting that dosimeters were not being used in the two hospitals. The Maximum Permissible Dose can be considered only as upper limit which should not be exceeded without careful consideration of the reasons for doing so; all exposures should be kept to a practical minimum[7].

In order to reduce the patient dose in diagnostic radiology, the dose administered to the patient should be measured accurately[8].

Table 3: *Score Achieved by the Radiographers of Services Hospital According to the Questionnaire, Total No. of Radiographers = 10.*

S. No.	No. & Radiographers	Score Achieved	Percentage
1.	1	9 to 12 (Good)	10%
2.	3	5 to 8 (Satisfactory)	30%
3.	6	1 to 4 (Unsatisfactory)	60%

Table 2 represent the frequency distribution of the radiographers according to score achieved in Mayo Hospital. Four were found to have good practice of radiation protection measures which is 28.57% of the total population.

Five showed satisfactory practice of radiation protection measures, which is 35.7% of the total population. Similarly five showed unsatisfactory result which came out to be 35.7% of the total population.

Table 3 shows the frequency distribution of the radiographers according to the score achieved by using protective measures in Services Hospital. Only one radiographer has good practice of radiation protection measures which is 10% of the total population.

Three radiographers had satisfactory practice of radiation protection measures which is 30% of the total population Similarly six radiographers were found to have unsatisfactory knowledge and practice of radiation protection measures which is 60% of the total population.

When we compare the results of these two tables and figures, we came to the conclusion that radiographers of the Mayo Hospital have better knowledge and practice of radiation protection measures than radiographers of the Services Hospital. However, both hospitals are not fulfilling

the requirements laid down by the Atomic Energy Commission and by the International Commission of Radiological Protection (ICRP). Therefore both hospitals need improvement in radiation protection measures particularly the Services Hospital, Lahore.

Table 4: *Comparison of Score Achieved by the Radiographers of Mayo Hospital for Radiation Protection Measures*

Results (Score)	Mayo Hospital	Services Hospital
Satisfactory Good (9 to 12) + Satisfactory (5 to 8)	9	4
Unsatisfactory	5	6
Total	14	10

Fisher exact test P value = 0.14

To apply the test of significance, the score of satisfactory and unsatisfactory results was compared as shown in Table 4. Although there is no significant difference in the results of the two hospitals, but it is probably due to the small number of radiographers.

Conclusions

From the discussion it can be concluded that:

1. Main radiology department of Mayo Hospital meets the minimum standards as regards the practice of radiation protection is concerned. The score secured according to the check list is 20 which is about (71.43%) which is satisfactory. As compared to this the score secured by the Services Hospital is 12 (43%) which is unsatisfactory.
2. About 65% radiographers of Mayo Hospital have satisfactory knowledge and practice of radiation protection measures and 60% needs improvement.
3. So the radiation protection measures are better practiced in Mayo Hospital than Services Hospital. However, both hospitals need further improvement as regards practice of radiation protection measures is concerned.

Recommendations

1. Health education of the radiographers, the patients, their attendants and general public about radiation hazards and protective measures for their prevention.
2. Film badges and lead aprons should be provided to the radiographers of Services Hospital.
3. Both hospitals should purchase the pocket dosimeter, as this is quick method of radiation detection.
4. All Film badges should be sent immediately at the end of month to Directorate of Nuclear Safety and Radiation Protection, Islamabad and they should be asked to send the results as quickly as possible.
5. All the radiographers should have annual medical check up particularly for their total leucocyte count.
6. All the X-ray machines should be periodically checked for tube leakage radiation.
7. Strict supervision of the radiographers should be done as regard practice of radiation protection measures is concerned.
8. Unnecessary and protocol patients should be discouraged.
9. X-ray fee for out-door patients should be increased and no X-ray should be done without any indication.
10. Hospital doctors should be directed to write X-ray examination only when there are genuine indications.
11. Proper dark rooms techniques should be practiced to avoid repeats. This will help to decrease work load and hence radiation exposure to patients and radiographers.
12. Radiographers should be rotated in different rooms every month to avoid excessive exposure to any particular radiographer.
13. Proper waiting rooms for patients and for their attendants should be constructed.
14. Warning sign boards should be displayed on the walls and doors about the dangers of radiation.

15. Patient's attendants should be discouraged to enter the X-ray rooms during exposure.

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CHLOROQUINE EFFICACY AGAINST PLASMODIUM FALCIPARUM IN PUNJAB PAKISTAN

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Summary

The effectivness of chloroquine against plasmodium falciparm malaria was tested in three districts of Punjab Multan, Muzaffar Garh and Jhang by in vivo test in nontransmission season of November and December 1996. Chloroquine was found to be 60% sensitive while RI resistance was 38.33% and RII was 1.67% No RIII resistance case was found. Health authorities should remanin vigilant on the issue of chloroquine resistant malaria. Frequent in vivo and vitro studies should be conducted and also quality control be properly imposed on locally manufactured chloroquine.

Introduction

Drug resistance is the ability of a parasite to multiply or to survive in the presence of concentration of a drug that normally destory parasites of the same species or prevent their multiplication. Such resistance may be relative or complete[1].

Pharmacokinetic properties of some antimalarials have lead to the modification of this definition to the fact that the form of the drug active against the parasite must gain access to the parasite or the infected red cell for the duration of the time necessary for its normal action[2].

The internationally accepted procedure for assessing the response of malarial parasite to therapeutic doses of anti-malrials with particular emphasis on chloroquine was set out by WHO scientific group on resistance of malarial parasite to drugs in 1965[3].

There was initially a 2 stage in vivo test which was subsequently revised by WHO scientific group on chemotherapy of malaria in 1973[4]. According to this revision chloroquine was administered either as a single dose of 10mg / kg body weight and the patient followed up for 4 weeks. Alternatively 25mg base / kg body weight is given over 3 days "10mg / kg is given on day 0 and day 1 and then 5mg / kg on day 2". Follow up is done for 7 days field test in which only RII and RIII can be determined. However for the determination of RI as well the extended field test has to be done where the cases are followed up for 28 days. Criteria for interpretation of the results of the in vivo tests are as follows[5].

Response	Recommended Symbol	Evidence
Sensitive	S	Clearance of asexual parasitaemia, within 7 days of initiation of treatment, without subsequent recrudescence.
Resistance I	RI	Clearance of asexual parasitaemia as in sensitivity followed by recrudescence.
Resistance II	RII	Marked reduction of asexual parasitaemia but no clearance.
Resistance III	RIII	No marked reduction of asexual parasitaemia.

The question as to how malarial parasite particularly **P. falciparum** develop resistance to chloroquine has been under the investigation of biochemists and genetists, since last thirty years, but no satisfactory explanation so far has been suggested for the mechanism underlying the development of resistance. Some of the factors which play an important role in development and propagation of drug resistance in **P. falciparum** are massive drug administration, inadequate therapy, vector intensity, movement of population and immune status of public[6].

Material and Methods

The present study was under taken in five districts of Punjab, Multan, Muzaffar Garh, Jhang, Khushab and Gujrat but was conducted only in Multan, Muzaffar Garh and Jhang due to high malaria incidence and high **P. falciparum** ratio in these three districts.

The only practicable method of eleminating the chances of reinfection was to carryout the test in known non transmission season i.e November, December and January in Pakistan. The criteria of selection of cases was as recommedded by Payne David (1982)[5]. Only single species infection i.e plasmodium falcipaum was included and cases of mixed infection were excluded from the study. Cases were selected with a minimum threshold of 1000 a sexual parasites per cubic millimetre of blood. Medical history of patients included in the study was taken and patients receiving any 4-aminoquinolines, during the previous 14 days were excluded. The urine of patients was tested for 4-aminoquinolines and patients with positive result were excluded. The test cases who met the criteria were weighed and administered chloroquine dose as per schedule, 10mg / kg on day 0 and 1 and 5mg / kg on day 2. The chloroquine used in this study was supplied by the Directorate of Malaria Control Islamabad. All the test cases were given chloroquine from the same batch.

The urine was tested through Dill-Glazko test for detection of chloroquine metabolites in the samples. 10 drops of Dill-Glazko eosin were added to 2ml urine in test tube and mixed vigorously for 15 seconds. The presence of chloroquine in the urine is indicated by change in colour of the precipitated chloroform from light yellow to voilet red[7].

The follow up blood slides were obtained fromall the test cases on day 1,2,3,4,5,7,10,13,17,19,22,25,28 for monitoring of the course of asexual parasitaemia[6].

After initial fixation of thin smear with methanol both the thick and thin smears were stained with 2.5% Giemsa for 35 minutes. Asexual parasites were counted till 1000 WBC's have been counted or 500 asexual parasites. Gametocytes were however, counted against 2000 WBC,s. Slides were declared negative only after thorough search of at least 100 fields[5].

Results

The results of the screening survey carried out in 5 districts of Punjab are summarized in Table 1. It was found that in Khushab and Gujrat transmission of falciparum malaria was very low and thus these districts were excluded from test. In Multan, Muzaffar Garh and Jhang cases were considered suitable for the test. In Multan district 71 cases were found to be positive for **P. falciparum**. Among these complete follow up study was possible in 29 cases. Ninteen cases among these 29 cases were sensitive to

Table 1 *Initial Screening Survey Carried Out In Five Districts of Punjab*

Name of district	Multan	Muzaffar Garh	Jhang	Khushab	Gujrat
No. of localities surveyed	9	15	6	23	16
No. of persons examined	266	900	1562	1667	1182
Plasmodium vivex (positive cases)	14	46	21	19	3
Plasmodium falciparum (positive cases)	71	48	98	17	4

Table 2 *Response of Plasmodium Falciparum to Chloroquine in Three Districts*

Name of district	Multan n = 29	Muzaffar Garh n = 30	Jhang n = 61	Total n = 120
Sensitive	19 (65.51%)	15 (50%)	38 (62.29%)	72 (60%)
RI	9 (31.4%)	14 (46.66%)	23 (37.7%)	46 (38.33%)
RII	1 (3.45%)	1 (3.34%)	0	2 (1.67%)
RIII	0	0	0	0

chloroquine while 9 cases had RI and one case had RII resistance. In Muzaffar Garh district 48 cases of **P. falciparum** malaria were detected and in 30 cases complete follow up study was possible. Among these 30 cases 15 were sensitive to chloroquine while 14 cases had RI and one case had RII resistance whereas in Jhang 98 cases of **P. falciparum** malaria were detected with complete follow up in 61 cases. Thirty eight among these were chloroquine sensitive, 23 had RI resistance while no RII resistance case was identified in Jhang district.

There was no RIII resistance case against **P. falciparum** in all the three districts studied.

Discussion

Resistance of **P. falciparum** to chloroquine, the best known of the 4-aminoquinolines was first noted in the late 1950's from Colombia and Thialand. Reports of similar resistance patterns quickly followed from other countries in South America and South East Asia[9]. The present study has revealed 60% chloroquine sensitivity while RI resistance was 38.33% and RII was 1.67%. No RIII resistance cases were found in the present study.

The first well documented case of chloroquine resistant **P. falciparum** was reported from Africa in 1979 in a tourist who had contracted the infection in Kenya. Since then, cases have increasingly been reported among non immune vistors to east Africa[8]. From 1981 onwards, resistance has been reported among indigenous semi immune inhabitants.

After repatriation of Pakistan nationals from Bangladesh to Pakistan in 1973-74, the Directorate of Malaria Control carried out a study on suitable subjects from the districts of Jhang, Muzaffar Garh and D.G. Khan were included in the first ever in vivo test in the country during Jan-Feb 1976. According to this study 30% of the test subjects showed the presence of chloroquine resistant falciparum malaria parasites. However the Directorate of malaria Control (1981) regarded the high percentage of resistant cases to be due to the sub-standard chloroquine tablets manufactured locally rather than the resistance of malarial parasite. Later on studies were carried out by Directorate of Malaria Control, Islamabad along with the WHO assistance from 1976-1991. According to these studies the sensitivity of chloroquine varied from 94.6% in 1976-83 to 31.8% in 1984-87. Whereas RI resistance was from 5.06% to 56.8%. While RII resistance was from 0.24%-8%. There was no RIII resistance case[10,11,12,13,14,15].

In 1991 a study in Kasur and Sargodha (Mardan) districts revealed 50% sensitivity of chloroquine while RI resistance was 41.9% and RII was 8.14%. No RIII resistance cases were found[6].

The first reported case of RII resistant falciparum malaria in Pakistan was in December 1992 in a male from Rahim Yar Khan who visited Saudi Arabia for Umrah[16].

According to WHO emergence of resistance to the tune of 20% is sufficient enough to warrant that life threatening and serious suitation exists and should be treated with quinine parenterally rather than chloroquine, providing benefit of doubt to the patient[17].

The epidemiological situation in India, our neighbouring country is very serious. In 1978 chloroquine sensitivity in India was 89.85% which in 1995 was only 7.6%. S/RI resistance in India in 1995 was 76.5%. RI 6.3%, RII 5.3% and RIII resistance was 4.2%[18].

Keeping in view the reports of outbreaks of chloroquine resistant **P. falcipanim** malaria in

India, our health department needs to be more vigilant to monitor the development of chloroquine resistant falciparum malaria in Pakistan. Also check should be kept on the quality of the drugs specially chloroquine which are being manufactured locally so that resistant strains do not develop.

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COMMUNITY BASED PREVETION AND TREATMENT OF AVOIDABLE BLINDNESS
(A study report of free eye camps)

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Summary

The study was conducted to identify the factors leading to early senile cataract formation, treatment of cataract in the free eye camps and the attitude/response of the community towards the free eye camps. The attendance of patients in eye camps has been encouraging always, and this was the case with these eye camps too. All the risk factors leading to early senile cataract formation viz. Dietary deficiencies, certain diseases(diabetes mellitus and hypertension), smoking, deprivation and over exposure to excessive sun light were invariably present in the study areas. Patients turn out was excellent. During 15 days of these three eyes camps (of 5 days duration each) 7645 patients attended these camps with eye complaints. Out of which 4812 were male patients and remaining females. Average patient's attendance per day was above 500. Overall 851 operations were performed 789-cataract extraction and 62 pterygium. A team of 2-eye surgeon with four paramedics and 10 local supporting staff from the Tehsil Headquarter Hospital were they're to perform the surgery. Average of 65 intracapsular cataract extraction was carried out per day. The condition of all the operated cases was found satisfactory on follow up after one month.

Introduction

Blindness has been recognized as a major public health problem, not only because of its impact on the quality of life of individual, the family and the community at large, but also because of the gross socioeconomic impact of blindness. In 1960 the WHO recorded a global survey on the incidence of blindness. Diseases of lens and of the retina contribute anatomically about 65% of cases of blindness. In general 23% of blindness is caused by 'Senile' cataract which is an avoidable blindness. In 1976 there were 10 million blind people in the world, in 1990 the figure was 30 million and today there are more than 50 million blinds---and 80% of this is avoidable. Blindness caused by senile cataract is not a disease, but is a part of aging process. Every living individual is going to experience this age related change in the lens. It is the age of onset, which vary from individual to individual. There are some risk factors, which lead to early onset of senile cataract. These factors have been studied, observed and surveyed in the area where free eye camps were established.

Risk Factors Leading to Development of Age-Related Cataract

In order to identify the possible risk factors and assess their importance in the development of age-related cataract ophthalmologist in New Dehli evaluated 1441 patients with age-related cataract and 549 controls. They observed an increased risk of cataract with lower educational achievements (all type of cataracts); decreased clouds over place of residence (all types); diet low in selected nutrients such as protein; higher blood pressure and lower body mass index; use of cheaper cooking fuels (cortical, nuclear and mix); and lower levels of an antioxidant index based on red blood cell levels of glutathione peroxidase and glucose-6-phosphate dehydrogenase and plasma levels of ascorbic acid and vitamin E (posterior.

sub-capsular, and mixed). The study identified an interesting mix of associations for specific cataract types. The findings are consistent with the view that age-related cataract development is a complex multifactorial process[1].

(a) Dietary Deficiencies:

Oxidation of lens protein causes senile cataract. It has been observed that dietary antioxidants Vitamin C and E, carotene, riboflavin might therefore prevent the formation of senile cataract. U.S. workers recruited over 50000 female nurses aged 45-47, and recorded their food intake and use of vitamin supplements. During eight year's follow up, nearly 500 of the nurses required cataract extraction. Those with a high dietary vitamin A intake (excluding supplements) had a 40% lower risk of cataract. Spinach, rather than the carrots, appeared to be especially protective; it contains the less well-known carotenoids, lutein and zeaxanthin, where as carrots contain beta carotene. Women who used long-term vitamin C supplements also had lower risk of cataract, though no association was found neither with multivitamin supplements nor with vitamin E or riboflavin. Our findings suggests that dietary carotenoids, although not necessarily beta carotene, and long term use of vitamin C supplements may lower the incidence of cataracts severe enough to require extraction[2]. Professor James Robertson, Ontario claimed that supplementary C and E might reduce the risk of cataract by about 50-70%. The chances of such patients having taken extra C were only 30% and E 44%.

(b) Hypertension and Diabetes:

A study conducted in US by ophthalmologists investigated possible risk factors for cataract, such as hypertension, diabetes mellitus, and drugs used in the treatment of hypertension. A statistically significantly increased risk of cataract was found in-patients with hypertension (odd ratio [OR] 1.49), and diabetes mellitus (OR 1.79). Estimation of the combined effect of hypertension and diabetes mellitus resulted in an even higher risk for cataract extraction (OR 2.66). A positive association of cataract extraction and treatment of hypertension with the diuretic frusamide was also found (OD 1.95)[3].

(c) Smoking and Cataract:

A study conducted in US suggests a significantly increased, dose dependent, risk of pure nuclear lens opacities associated with cigarette smoking. The risk of nuclear cataract decreased if the subject stopped smoking. The effect of smoking was most striking in those aged 80. No relationship with earlier age of starting smoking was seen[4]. Cigarette smoking increases the risk of aged related nuclear cataract[5]. Study conducted in US strongly indicates an association between smoking and cataract formation. The study involved 17824 doctors. The doctors who smoked 20 or more cigarettes per day at enrolment were twice as likely to develop cataract as those who had never smoked; they had a two fold risk of nuclear sclerosis cataract and three fold risk of posterior capsular cataract. Doctors who had given up smoking before the study had a marginally significant 50 % increased risk of cataract[6]. Another adjacent study involved more than 50,000 female nurses followed for 8 years. The author found that smokers were more likely to develop cataract, particularly subcapsular cataract (relative risk 2.6)[7].

The City Eye Study in London was a 9-tear longitudinal study into the most important blinding condition s in an aging population, immediately before and after retirement. During the first 3-year phase it recruited 1029 volunteers aged between 54an d65 years, primarily from companies and organizations working in or around the city of London. The analysis of the first cohort data showed a significant association between nuclear lens opacities and moderate to heavy smoking. The relative risk for nuclear lens opacity and cigarette smoking ranged from 1.0 for past light smokers through 2.6 for past heavy smokers, to 2.9 for current heavy smokers[8].

(d) Deprivation Dehydration and Cataract:

Dehydration caused by severe diarrhoea or otherwise by increasing blood urea concentration makes cyanate more available for carbamylation of lens protein may be an important risk factor for cataract formation. A study in the Himalayas found a relation between cataract and deprivation, notably poor nutrition and hygiene[9]. During a case controlled study of risk factor for cataract, the risk of blinding cataract was noted to be strongly related to level of exposure to dehydration crisis

(life threatening diarrhoea and for heat stroke) in a consistent and dose dependent manner suggesting cause and effect. A substantial proportion of disabling cataract could be avoided by preventing severe acute dehydration[10].

(c) Over exposure to Sunlight Ultraviolet Rays and Cataract:

Onset of senile cataract is earlier and commoner in tropical areas where the inhabitants are over exposed to ultraviolet rays / sunlight. Researchers in Baltimore undertook an epidemiological survey of 838 watermen (mean age 53 years) to look for any association between ultraviolet exposure and cataract. The author concluded that there is an association between exposure ultraviolet beam radiation and cataract formation. Exposure to ultraviolet beam can be dramatically reduced by wearing a hat with brim and close-fitting sunglasses with UVB absorbing lenses at time of maximum exposure to sunlight[11].

Material and Method

Patients with operable senile cataract were admitted for operation and the remaining patients were given medical advice. These camps were established in the Tehsil Headquarter Hospitals of the area. Name age and disease of the patients were entered in the register. After preliminary medical and laboratory examinations the patients were operated, three to five cornco-scleral stitches were applied. The patients were discharged after 48 hours stay in the camp. Aphakic glasses were provided to all the patients by the NGO who arranged the eye camps. All these camps were of 5 days duration and operations were performed during first four days of the eye camp. Patients suffering from pterygium were operated on the last day of the Free Eye Camps. The operated patients were advised to visit the same hospital exactly after one month for follow up. During follow up examination condition of all the patients was found satisfactory. The related information about the camps is given in Table 1.

Table 1: *Related Information about Three Free Eye Camps.*

		Hattian Bala (Muzaffarabad) A.J.K. 30.5.1996 to 3.6.1996	Forward Khauta (Dist. Bagh) A.J.K. 6.6.1996 to 10.6.1996	Sadda (Parachannar) FATA 29.6.1996 to 3.7.1996
Patients	Male	1342	1694	1776
	Female	858	943	1032
	Total	2200	2637	2808
Operations (Cataract)	Male	86	191	186
	Female	86	191	186
	Total	157	305	327
Operations (Ptreygium)	Male	8	10	11
	Female	9	10	14
	Total	17	20	25

Table 2: *Percentage Distribution of Total Eye Patients and Operations Performed at Three Eye Camps.*

Serial No.	Place	Total Number of Eye Patients	Percentage	Total Number of Operations	Percentage
1.	Hattian Bala	2200	28.78	174	20.45
2.	Forward Khauta	2637	34.49	325	38.19
3.	Saada (Fata)	2808	36.73	352	41.36
Total	-	7645	100	851	100

Results

7645 patients with eye complaints came for consultation / treatment during 15 days of these three eyes camps [4812 male patients' (62.94%) and 2833 female patients (37.06%)]. 851 operations were performed in total, out of which 789 (92.71%) were of intracapsular cataract extraction and 62 (7.29%) of pterygium. The statistical analysis is given in Table 2-7.

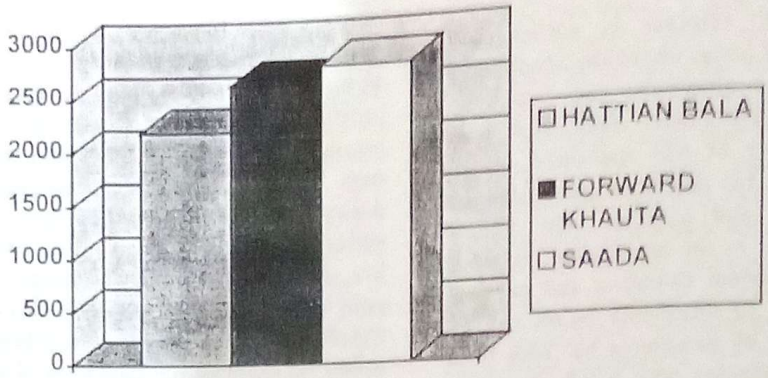

Fig. 1: Numbers of Patients Attended the Three Eye Camps

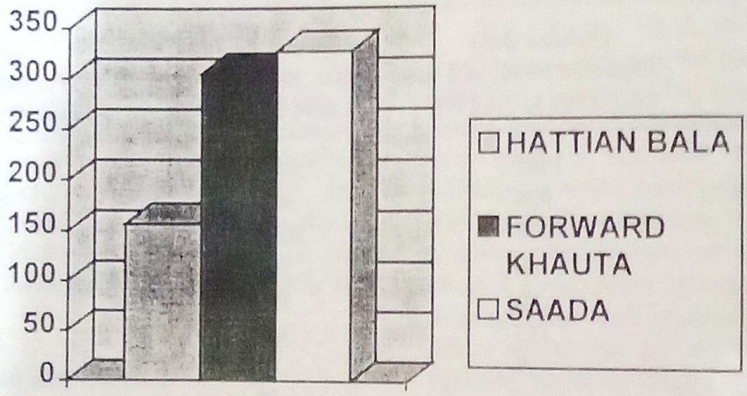

Fig. 2: Cataract Extractions Carried Out at Three Eye Camps

Table 3: *Percentage Distribution of Operations Performed at Hattian Bala*

Serial No.	Operation	Number of Patients Operated				Total	Percentage
		Male	% age	Female	% age		
1.	Catract	86	(91.49%)	71	(88.75%)	157	90.23%
2.	Pterygium	8	(8.51%)	9	(11.25%)	17	9.77%
Total		94	100.00	80	100.00	174	100.00

Table 4: *Percentage Distribution of Operations Performed at Forward Khauta*

Serial No.	Operation	Number of Patients Operated				Total	Percentage
		Male	% age	Female	% age		
1.	Catract	191	(95.2%)	114	(91.93%)	305	93.85%
2.	Pterygium	10	(4.98%)	10	(8.07%)	20	6.15%
Total		201	100.00	124	100.00	325	100.00

Table 5: *Percentage Distribution of Operations Performed at Sadda*

Serial No.	Operation	Number of Patients Operated				Total	Percentage
		Male	% age	Female	% age		
1.	Catract	186	(94.4%)	141	(90.03%)	327	92.90%
2.	Pterygium	11	(5.6%)	14	(9.03)	25	7.1%
Total		197	100.00	155	100.00	352	100.00

Table 6: *Percentage Distribution of Patients Attendance at Three Eye Camps.*

Serial No.	Place of Eye Camp	Patients		Total Patients
		Male	Female	
1.	Hattian Bala	1342 (61%)	858 (39%)	2200
2.	Forward Khauta	1694 (643.2%)	943 (35.8%)	2637
3.	Sadda	1776 (63.2%)	1032 (36.8%)	2808

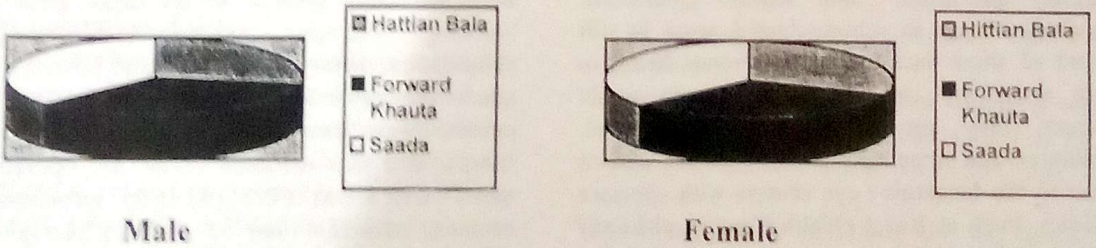

Fig. 3: Percentage Distribution of Male and Female Patients Attended the Eye Camps

Table 7: *Percentage Distribution of Male Female Patients Cataract Extractions Carried Out at Three Eye Camps.*

Serial No.	Place of Eye Camp	Patients Male	Female	Total Patients
1.	Hattian Bala	86 (18.58%)	71 (21.78%)	157
2.	Forward Khauta	191 (41.25%)	114 (34.97%)	305
3.	Sadda	186 (40.17%)	141 (43.25%)	327

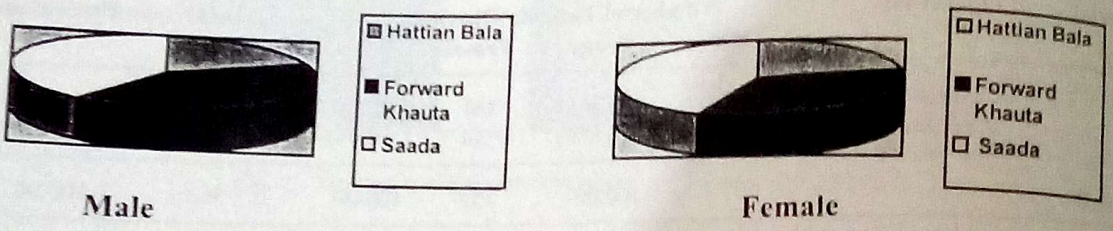

Fig. 4: Percentage Distribution of Male and Female Patients Cataract Extractions Carried Out at Eye Camps

Discussion

Senile cataract in Pakistan is the commonest cause of avoidable blindness. After independence in 1947 there were few eye centers other than teaching hospitals where eye diseases were tackled and eye operations performed. Some Eye clinics were established in private sector but they could not coup with the increasing number of senile cataract. Few NGO's during sixties starting arranging free eye camps in the country. Presently every year about 100 to 125 free eye camps are established in the under developped / remote / neglected areas to treat the blinds (mostly cataract, pterygium and rarely glaucoma). Population living in remote / hard areas is still devoid of these facilities. The persons living in these areas are virtually blind due to senile cataract, they are also malnourished, aged, debilitated and financially poor, therefore cannot travel to the hospitals / eye centers with eye care facilities. Even at Rural Health Centers with only 25 beds reserved for all type of illnesses cannot met with the demand of the increasing cataract patients. Therefore majority of these patients prefer to stay blind rather to leave the place of living for cataract extraction. Functioning of such mobile eye camps at different places is very much needed in order to relieve the agony of these patients who otherwise cannot afford to go else where for cataract extraction.

The present study is designed to compare the turn out of patients and operations performed at three eye camps established at different places by a welfare organization. All the probable predisposing factors of early onset of senile cataract formation as narrated in introduction were invariably present in all these areas i.e. Smoking, excessive exposure to sunlight, dehydration, dietary deficiencies and poverty. The results are very much encouraging. Total 7645 eye patients were examined during 15 days (three camps, of 5 days duration each). 851 operations were carried out (789 (92.71%) intracapsular cataract extraction and 62 (7.29%) pterygium). The condition of all the patients was satisfactory on discharge and was also encouraging on follow up after one month.

In India there are about 2.5 million cataract patients every year. Natchiar et al. in the article 'Attacking the backlog of India's curable blind write that, "Indian eye surgeons carry out 1.2 million cataract extraction a year, but this is only the half of what is needed simply to keep up the new cases, let alone deal with the backlog of 10 million who remain untreated. A report from Madurai in south India describes an approach that could help reduce the number of treatable blindness throughout the developing world. The Avarind Eye Hospital has 1400 beds and carries out 69000 operations a year with a medical staff of only 30 plus 47 residents. Patients are recruited via temporary but highly structured 'screening eye camps' held throughout the community, and treatment is free in most cases. Both the hospital and screening camps rely heavily on trained support staff, thereby making maximum use of doctors' time. For example, paramedics carry out most of the routine tests, and four surgeons with 15 support staff can perform 200 intracapsular cataract extractions in 5 hours"[12].

Recommendations

India introduced an national programme to attack blindness in 1976, with a major emphasis on cataract surgery. The number of cataract operation rose from 500000 in 1981-82 to 2.2 million in 1994-95. With an increasing and aging population the number of people with cataract blindness has increased. Between 1971 and 1995 the population over 50 years old rose from 63 million to 125 million and the number of people blind from cataracts was 2.4 million in 1974 and 4.3 million in 1986. It currently estimated that between 2.5 and 5.8 million operations are needed each year and that with optimal use of present staff and resources some 3.5 million could be done. Better case selection is needed since less than half of the operations done at present result in the restoration of sight[13].

The number of unattended cataract patients is increasing in Pakistan every year. Population living in the cities has the facility for cataract extraction, but persons living in areas with no health care facilities (as related to eye problems) require our attention. Like India in Pakistan such programme to treat the avoidable blindness should be launched. Special eye hospitals / eye centers should be established in the areas which are devoid of facilities to treat the cataract patients. Free eye camps should be arranged in these neglected areas so the population living there can also enjoy charm of vision once again. Local Social Welfare Organizations and NGOs should arrange such free eye camps to treat the avoidable blindness. The population should also be made aware of risk factors leading to early onset of senile cataract. These factors especially smoking, dehydration and over exposure to excessive sun light can be avoided

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PRESUMPTIVE COLIFORM TEST OF DRINKING WATER SUPPLIED IN THE HOTELS OF KARACHI (SOUTH AND EAST DISTRICT)

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Summary

This cross sectional study was conducted with a view to assess the fitness status of drinking water supplied in different hotels of east and south districts of Karachi. Results revealed that in (22) low class hotels all were (100%) supplying water unfit for drinking purpose, while in middleclass hotels, 18 (85.17%)out of 21, were supplying water unfit for drinking purpose. The situation in highclass hotels, however satisfactory, one (14.28%) out of 7 is supplying unfit water for drinking purpose. However, further studies are required to deplore the situation.

Introduction

Water is necessity and amenity. Wholesome and abundant, it supports and enriches life. Unwholesome and scarce, it is a threat to health and to life itself. It is major component of human body (2 / 3), needed rightly in all body processes, digestion, absorption, and elimination of waste products.

The amount of water in the world is fixed some 1500 million km3 in all[1]. No doubt three quarter of earth is covered with water, but unfortunately 97% of this water is salty in the form of ocean and seas, 2% as Ice, remaining, 1% is fresh water, in tanks, ponds, springs, rivers and underground water[2].

In a typical American community, the average per capita consumption is about 600 litters per day. In Asia and Africa per capita consumption may be only 50 Lit. per day which doubles in summers season[3].

Much of ill health in the country is lack of safe drinking water and there can be no positive community health and well being without safe water supply. Infectious diseases are transmitted through human and animal excreta, particularly faeces of active cases and carriers in the community. The faecal contamination of water results in the causative organism, being present in water or prepared food which may result in infection spread. These organism may cause disease from mild gastro-enteritis to severe dyscentry Cholera Typhoid, Polio etc. In 1854 Cholera epidemic in Golden Square district of England was detected as water born disease[4]. There is a big toll of death in children in Pakistan due to water born diseases i.e. 31,830 per year[5], and every child has atleast 3 episod of diarrhea per year[6]. All in all some 93 countries in the world have been affected since 1961 with Cholera outbreak, a water born disease[7]. According to W.H.O. 80% of all sicknesses and diseases in the world are caused by polluted water, inadequate sanitation or unavailability of water[8].

By the World Health Assembly in 1981, 12 global indicators were developed, regarding safe drinking water supply, target was made as, water for all by 1990[9]. But in Pakistan this goal is still not achieved only 80% of Urban Population and 40% of Rural population has access to safe drinking water[10]. Thus government has set priority in 8th plan so that goal can be achieved by the year 2000[11].

Activities in the Hotels by the Community is becoming part of life, like marriage ceremonies, academic and business activities show biz, social gathering exhibition and recreation etc. Such moments are means when health and happiness becomes all together. It is only possible when individual's internal and external environment is normal. The present study was conducted to appraise the fitness status of drinking water supply of North and South district of Karachi.

Material and Method

District East and South of Karachi were selected as study area. Our sample frame was 110 hotels, 50 Hotels were selected on random basis with the help of random number table. 22 were from lower class (having no lodging but boarding facilities only). 21 were from middle class (having lodging and boarding facilities but no recreational facilities and no facility for social activities like Banquet Hall, Seminar Hall, Swimming pool etc. 7 High class (furnished with all above mentioned facilities).

Water was collected according to the WHO guide lines for drinking water in sterilized glass bottles with glass stopper with overlapping rim of 300 mile capacity. To the sampling bottles sodium thiosulphate was added to neutralize the water samples. These bottles wee sterilized in autoclave at 120°C for 15 minutes. Water was collected from the Jug water put to the customer for drinking purposes and also same amount of water was taken from the water Reservoir of the hotel. Bottles were labbled and put in Ice box and taken to the Chemical Bacteriological laboratory, Government of Sindh. Transporting time was taken 20 minutes to reach the Laboratory from the source of collection of samples. In the laboratory bacteriological testing of water was done for the presence of E.Coli on the basis of presumptive Coliform test[12].

Discussion

As water has a key role in maintaining health of any community and part and parcel of human life. It is as essential as air and food. For human consumption water must be free from physical, chemical and Bacteriological contamination. Though water has been used since dawn history but realization for health hazards by its contamination is not ancestral.

Khaliq et al (1986) have reported 57 sample from spring streams shallow wells were unfit for drinking purposes[13]. Study conducted by PMRC, Karachi (Baqai 1988). 87% water samples from Taps were contaminated[14]. Samee and Rehman (1985) studied pipe water supply and reported that 52% treated samples were positive for Coliform[15]. The same situation is revealed by Karamat et al (1993) in Rawalpindi / Islamabad Area that 56% samples of treated water were contaminated with Coliform bacteria[16].

The results of this study are in line with those of the above studies. Overall, out of 100 samples from 50 Hotels, 79% were found contaminated with faecal coliform. When we see separately 82% Jug water samples were contaminated with faecal coliform and 76% samples of reservoir water were contaminated with faecal coliform. Table 1.

Tab. 1 *Bacteriological surveillance report distribution according to the source of watersupply at hotels of District East and South Karachi.*

S. No.	Types of Water	Contaminated		Uncontaminated		Total
		No.	% age	No.	% age	
1	Jug water	41	82.0	9	18.0	50
2.	Tank water	38	76.0	12	24.0	50
Total		79	79.0	21	21.0	100

Average No. of E.Coli was 177 per 100 ml. of Jug water and 125 per 100 ml. of reservoir water while cutoff figure is 0 / 100 ml of water[17]. Thus indicating enhanced contamination of Jug water by workers and due to poor sanitation of environment. Now results in details are, in lower class hotels, all the samples 100% were found contaminated and

Tab. 2 *Bacteriological surveillance report distribution according to the source of water supply at lower class hotels District East and South Karachi*

S. No.	Types of Water	Contaminated		Uncontaminated		Total
		No.	% age	No.	% age	
1	Jug water	22	100.0	Nil	0.0	22
2.	Tank water	22	100.0	Nil	0.0	22
Total		44	100.0	-	-	44

Average No. of E.Coli per 100 ml. of Tank water was 218, while average No.of E.Coli per 100

ml. of Jug water in lower class hotel was found 266. The difference in figures shows additive effect of poor hygiene of the workers and the environment. In case of middle class Hotels from 42 samples (21 Jug water samples, 21 reservoir samples) 18 samples (85.71%) of jug water were found contaminated and average No. of E.Coli Per 100 ml. was found, 144, while 15 samples of water reservoir were found contaminated were contaminated and average No. of E.Coli per 100 ml. of Tank water was 69, again high lighting the importance of personal hygiene of the workers. Another interesting thing is that in middle class hotels. There were 3 hotels, where reservoir water was free from E.Coli but in these three hotels, Jug water was found contaminated.

As regards situation in high class hotels out of 7 service Reservoir water samples one (14.28%) was unfit for drinking purposes and average No. of E.Coli was 18 per 100 ml. Table No.4 But in the same hotel water supplied on the table in Jug was free of E.Coli. Clearly indicating the importance of intermediate treatment and other factors like

Tab. 3 Bacteriological surveillance report distribution according to the source of water supply at middle class hotels hotels District East and South Karachi.

S. No.	Types of Water	Contaminated		Uncontaminated		Total
		No.	% age	No.	% age	
1	Jug water	18	85.71	3	14.28	21
2.	Tank water	15	71.42	6	28.57	21
Total		33	78.57	9	21.42	42

workers hygiene and environmental sanitation help to minimize the problem. While in another hotel which was the near beach of Arabian sea supplying unfit water for drinking purposes average No. of E.Coli in Jug water of this hotel was 10 per 100 ml, while its reservoir water sample were fit for drinking purpose.

Tab. 4 *Bacteriological surveillance report distribution according to the source of water supply at high class hotels District East and South Karachi*

S. No.	Types of Water	Contaminated		Unrontaminated		Total
		No.	% age	No.	% age	
1	Jug water	1	14.28	6	85.71	7
2.	Tank water	1	14.28	6	28.57	7
Total		2	14.28	12	85.71	14

In view of analytical results it has been found that those hotels which were near the Railway Station or bus stop or in slum areas were found more contaminated with fecal coliform. Apart from the passenger, the employees of such lower class hotels were also creating problems due to lack of personal hygiene. Another factor like poor internal sanitation, improper washing and cleaning utensils in the hotel for customer use, improper drainage, moopishness in disposal of refuse, leaking sewerage system, linking with the water supply, open reservoir tanks easily approach by flies were problem creating factors. In lower class hotels direct filling of the jugs from the reservoir irrespective of dusty particle at the base of the jug, dish washing with dirty piece of clothes, using same cloth for cleaning multiple tables at the same time was in practice, which is again a problem full practice.

However in high class hotels arrangements regarding maintaining the quality of water was upto the standard. Most of the hotels were keeping their own system of filtering disinfecting, the drinking water. Water supply in Karachi in this area is intermittent so contamination can occur due to back syphonage action in crossing of sewerage pipes and water pipe lines.

In the light of the results, the following recommendations and suggestions are made:

1. Effective chlorination of drinking water supply is strongly needed to reduce the problem.
2. Personal hygiene of the hotel employees must be observed.
3. Sanitary fittings of the hotel should be with proper material, special attention in the hotel

should be paid to clean the utensil used by the customers.

4. Special attention should be paid to the sanitation of the hotel premises by managing proper disposal system regarding hotel refuge garbage etc.
5. Hotel owners must construct proper toilet fascilities for their workers.
6. Municipal Corporation should be advised to construct the Sanitary Latrine for public purposes mostly in those areas where people movements are at large like railway station and bus stop.
7. Very special attention in the hotels should be paid to clean the utensil used by the customers.
8. There should be continuous survey by local authorities for under ground Tanks reservoir in the hotels regarding cleaning, chlorination, and their proper maintenance.
9. Water supply to the hotels should be in excessive and contineous type to compromise the daily need.

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DECENTRALISED DISTRICT HEALTH PLANNING IN PUNJAB

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Punjab is a huge province, and the failure of the health sector in achieving the goal of Health For All can partly be attributed to the existing centralised health planning system. The province is in the initial stages of introducing decentralisation process in the health sector. In order to promote equity, District Health Planning will adopt principles of primary health care, most importantly community participation and intersectoral collaboration. The Realistic Rational Planning Spiral is considered most suitable for application at the district level.

The health planning in Punjab is organised around a heavily centralised and bureaucratic set-up. The existing structure fails to incorporate the community needs and aspirations, besides ignoring the views of peripheral health managers. Therefore decentralisation of planning system and introduction of district health planning are the needs of the day.

Within the health sector of Punjab, the district has been recognised as the key level for matching local needs and priorities with provincial policies and guidelines. This recognition led to the introduction of District Health Management Teams (DHMTs) and District Health Authorities (DHAs), which are going to be vehicles for the decentralisation of health services to the district level in the province. Decentralisation of planning to districts is an important intervention under serious consideration in Punjab.

The system of decentralised DHP in Punjab depends on development of planning structures, systems and skills at the districts in the province. The development of DHP does not mean a weakening of the province, rather a robust provincial planning system is a prerequisite for DHP. Strong organisational linkages between districts and the provincial planning system, and districts and the lower levels are essential for meaningful liaison between different levels. Similarly, DHP would be closely linked with budgeting at the districts.

District planning can serve to increase the participation in decision-making, which can lead to an increased commitment to programme implementation; people may be more willing to implement programmes and policies that they have helped to formulate. By facilitating a clear definition of roles, planning can help to minimise interpersonal conflicts. A good plan can be a powerful tool for justifying a district budget and the best defence against inappropriate top-down decisions.

Planning for health at district level would be based on principles of PHC which ensure equity. The importance of involving communities and other sectors in all stages of planning cycle at the district level can not be over emphasised.

In the following sections, the individual stages of realistic rational planning model as applied at the districts in Punjab are discussed. The spiral of realistic rational planning is depicted in the following figure(Green 1992):

1: Situational Analysis

The starting point for district planning is a detailed analysis of the present situation in the district in order to produce the *district health profile*. This profile allows today's situation to be seen as a starting point for planning improvements (Vaughan and Morrow, 1989).

The purpose of the annual district profile is to provide a broad basis of understanding of health needs, health services, resources and management systems for two reasons:

- providing a common reference point for the rest of the planning process; and
- allowing the selection of priority problem areas.

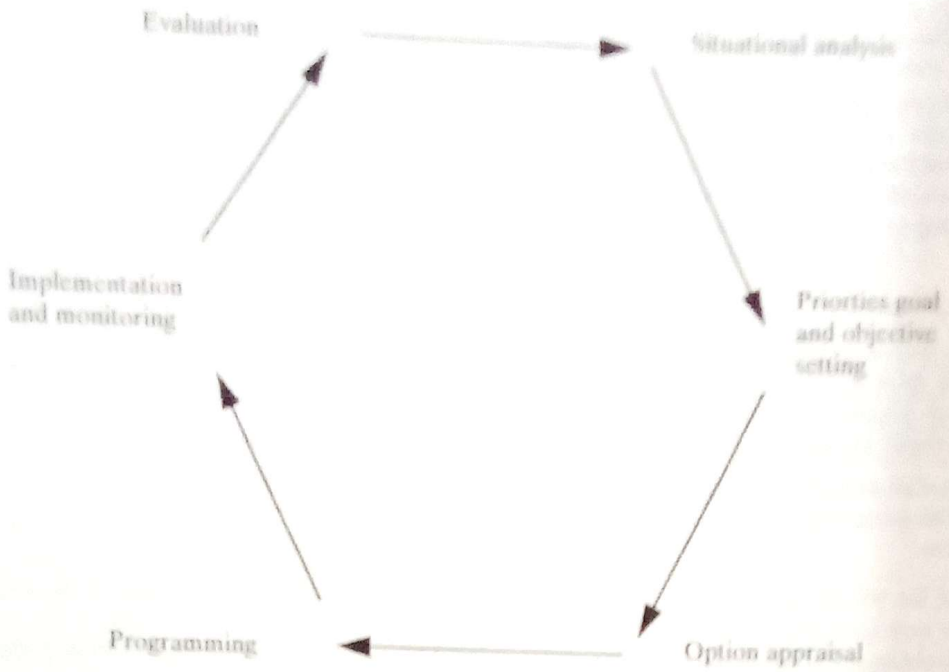

Fig: Planning Spiral

The profile is to be arranged in various sub-divisions *i.e.*, Introduction, Health Needs, Health Services and Resources and Management Systems.

To produce a useful district health profile requires a combination of a good local knowledge of the district and all the available health information. The latter information is required both from the health services system as well as directly from the community. Historically information needs have been associated with disease control functions, and a broadening towards planning and management is necessary (Green *et al*, 1997). It is imperative that a balance is reached between the community perceived and technically felt needs.

1.1: A major category of information required for DHP concerns services and resources. This includes information on: the socio-economy, (income; employment; educational levels / literacy; cultural / religious characteristics); geography / topography; infrastructure (transport; communication); non-health sector services (education; water / sanitation; agriculture; community development; public works). This is contextualised by analysis of national policies and political environment.

1.2: Information Provided by HMIS: The HMIS operative in the Punjab is deficient in information required at district level for different decision to be made effectively. As the health information system is the backbone of all the activities occurring at the district level, therefore, the ultimate aim is to make this system dynamic and responsive instead of the existing retrospective post-mortem statistics, which are mere compilation of routine statistical return on a limited number of the aspects of the health programmes.

1.3: Besides information provided by the HMIS, the district planners will assess the perceived need and demand for health services by the community and the equity of access to health care resources or resource allocations relative to need for groups differentiated by gender, class, ethnicity, age, or location (Conn, Green and Walley, 1996). Use of Rapid Participatory Appraisal (RPA) technique for incorporating community perspective is the most appropriate way of achieving this end.

2: Setting Priorities and Objectives

Due to the ever-present scarcity of resources, district planners would be deciding which health

needs are to be met, - and which, therefore have to be left. Prioritisation decisions should take into account the wider context, as described by the situation analysis, and incorporate strategies for ensuring greater equity of access to and use of health services(Tarimo, 1991). Collins (1997) has described a detailed process of priority, goal and objective setting as discussed below.

2.1: Problem prioritisation

The first step is to identify a list of problems based on the information in the district profile. Each problem should be formulated as a full statement to clarify the nature of the problem.

e.g. Proportion of women provided antenatal care is low. The budget for supply of medicines is insufficient.

The final list will be probably quite long and complex. The next step, therefore, is to select only a few main problem areas for initial consideration. This should be done through discussion among the district planning group. It would be pragmatic if only three main problem areas are selected. The problems selected should be a combination of those relating to health needs and those relating to health systems. At least one health system problem should be included in the selection. Some criteria useful in selection are:

- *Magnitude / Equity:*

  How big is the problem? What proportion of the population will be affected? Which groups in the population does the problem affect?

- *Importance:*

  How serious is the condition? Does it threaten life or decrease the ability to live a 'normal' life? Or, in the case of a health system problem, how seriously does it affect service delivery?

- *Vulnerability:*

  Is a solution to the problem readily available?

- *Last year plans:*

It is also important to examine briefly the present level of service offered for different health needs. If some areas have been identified in past years, it may not be necessary to make them priorities in the current plan.

2.2: Problem analysis

After deciding about the three priority problems, the next stage is to analyse them with a problem tree. The basic technique is to think about the problem under consideration, and ask the question *'but why?'* This will identify the underlying problems, the question *'but why?'* would be repeated, in order to think about what in turn causes these. Following this method carefully helps us to distinguish between cause and effect. Analysing the root causes should continue until eventually it becomes obvious that a level is reached at which it is possible to undertake some sort of health service action.

2.3: Identifying Goals and Objectives

These are simply the inverse of the problems and their core causes. For example, if the problem area is high level of maternal mortality, then the goal will be to decrease the level of maternal mortality. Then, if the core causes of the mortality rate were the low level of births attended by trained staff and low level of antenatal care, the objective would be; increased births attended by trained staff and increased utilisation of antenatal care.

The relationship between objectives and goals should be hierarchical, meaning that if the objectives are achieved, then the goals will be reached. If there are any reasons why this should not happen, or assumptions have been made, then these should be specified.

2.4: Developing Strategies

A strategy is best understood as the overall approach or direction for achieving a desired result. Most health problems are not usually caused by a single underlying factor but by many interdependent determinants(MoH Ghana, 1993). Therefore, the district health planners will be able to develop more than one strategy to address a particular health problem. Some strategies may require inputs from sectors of society other than health sector. Strategy development should include discussions about the potential to combine strategies or the possibility of implementing specific components of an overall strategy.

3: Option Appraisal

Option appraisal entails deriving and assessing the different options or strategies for achieving objectives and reaching targets. Choices need to be made as to which strategy is better for achieving priorities, which should be given more resources, or be introduced first. The option appraisal may lead to revision of objectives and related targets. Certain objectives may be postponed to a later planning period while others, possibly of lower priority but which are more feasible in the present circumstances, may be added.

It would be quite difficult to apply complicated appraisal techniques e.g., cost-effectiveness and cost-benefit analyses at district level, as the data required is rarely available here. Collins (1994) describes the following criteria when selecting interventions at district:

- *"Appropriateness:*

  Are the interventions selected appropriate to local conditions? Are they acceptable to local communities?

- *Effectiveness:*

  How many people will the intervention effect? Have the interventions been shown to be effective? Are they likely to be effective in this particular district?

- *Cost:*

  Is the intervention expensive? Does the high level of effectiveness justify the large cost compared to other interventions?

- *Feasibility:*

  Is the intervention technically, administratively, and legally feasible?

- *Sustainability:*

  Can the effects of intervention be sustained over time?"

The final choice of strategies will depend on many variables. It is advisable to consider strategies for which resources are either routinely available or readily mobilised. As many strategies may be comprised of operational components or sub-components, therefore, if it is not immediately feasible to implement a complete strategy or combination of strategies, it may be possible to begin by introducing one or more strategy components.

4: Programming and Budgeting

The next step in the planning cycle involves considering the activities or programmes required to implement each strategy. The overall outcome should be an action plan and budget.

4.1: Preparing Action Plans

The preparation of detailed action plans entails a number of critical steps which should be followed in logical sequence. Both routine and incremental activities would be considered while drawing the action plan. The critical steps in the formulation of action plan are as follows:

- Identifying activities
- Timing
- Person(s) responsible
- The resources needed

  Quantity and unit cost
  Preparation of budgets
  Sources of funding

- Expected outcome.

4.2: Linkage of District Health Planning With Budgeting:

The process of planning at district level has often ignored budgeting. Resources are often allocated to districts without consultations with DHOs, as a result the DHOs has a minimal understanding of the budgeting process and the mechanism involved in the disbursement of funds.

Introducing district health planning should accompany a radical change in the traditional system of health services budgeting, so that it can become an active instrument for securing and distributing resources equitably. The district budget (both for development & recurrent expenditure) for each year would be determined by the information provided in the planning process. The revised budgetary system should bring out existing inequalities and imbalances in health care, support the process of planning their reduction, and allow progress to be monitored by comparing actual expenditures against planned projections. Thus it should be structured to

identify expenditures by geographical area and by level of care(Segall, 1983).

5: Implementation

The implementation stage of the planning cycle is where theories can be translated into action(Memohan, Barton and Piot, 1992). The decisions needed for implementation concern firstly personnel who have to be allocated to the right place, in the right numbers, and at the right time. Second, decisions will need to be made about how to find and allocate both physical and financial resources. Third, is the question of the type of information needed to undertake the activities in the action plan, and how to process and disseminate it.

Memohan, Barton and Piot (1992) have listed the following causes of implementation failure, which are also valid for Punjab:

- 'resistance to planned change, whether internal or external to the health sector;
- resource scarcities;
- poor programming (unclear objectives);
- inadequate organisational structure and management skills to oversee implementation'.

Training of health workers is often the principal input used for improving the efficiency and effectiveness of implementation. Development of management skills, especially leadership skills in the district health managers of Punjab will go a long way towards making the most of district health plans. Activity-based learning involving in-service seminars and workshops interspersed with periods of implementation where health workers try out new procedures under supervision would be the ideal approach to training.

6: Monitoring and Evaluation

6.1: Monitoring is concerned with the observation of activities and programmes during the phase of implementation. Obviously, the actual implementation of activities may deviate from the planned progression. Monitoring involves developing methodologies and tools for following the progress of activities. In addition, monitoring involves providing planners and managers with the information they need to correct unplanned deviations and get activities back on track.

The progress of implementation can be monitored by using a variety of methods, including the following monitoring tools for district planning suggested by the MoH Ghana (1993):

- "Written and verbal reports from the district health system
- Visits to health facilities and communities
- Meeting or review sessions
- Use of a checklist."

6.2: Evaluation compares objectives and targets against the results, and unlike monitoring is not an ongoing activity but occurs at one point in time. Evaluation can be carried out upon completion of an intervention or part way through implementation.

Monitoring and evaluation at districts in Punjab would take into account views of other sectors and community. Conn, Green & Walley (1996) advocate use of participatory techniques and tools for monitoring and evaluation which have supposedly the following potential:

- 'Asking views of people actually involved in a project or targeted by it can generate important, and often very accurate information on costs, benefits and relevance of the intervention;
- It can help empower management, health workers and communities by encouraging a sense of ownership of the information generated. If people feel that their needs are being addressed, this will help to build their commitment to change and particularly to future interventions;
- It can be used as a means of accessing different groups within a community, getting a variety of perspectives on an intervention, and ensuring that less vocal or visible groups are not discriminated against.'

Participatory techniques in monitoring and evaluation, as suggested by Feuerstein (1986) rely heavily on community involvement and can be easily used in Punjab. These simple and relevant methodologies and techniques can be applied in the field by practitioners who have little or no training in evaluation. The important tools include

finding out people's views using workshops and meetings; using mapping techniques, pictures and photographs to stimulate discussion and analysis; using various observation techniques systematically and writing or recording profiles of particular places, events or people.

7: Planning Procedures at the District Level

It is important that clear planning procedures are adopted at district level. While it is very easy to get bogged down in bureaucratic planning procedures, it is helpful to have clear documentation on the nature of the various planning processes, and who is involved in each of them.

- A simple 'District Planning Manual' distributed to all the people involved directly in the process can be a useful way of doing this, provided it is clear and does not become unwieldy. It should not attempt to answer all the detailed procedural questions, but try to set out the relations with other management processes especially budgeting.
- A uniform format of district plan, avoiding the use of technical jargon will help the district planners to chalk out their activities and would include: the situation analysis of district; objectives and targets set by the district plus the resource implications of proposals for developing the health services; special resource requirements in terms of recurrent and capital budget and personnel.
- It is also necessary that a clear action-plan is set for the various planning activities at the district level. This is important to ensure that key dates are adhered to, and responsibilities for various activities are explicitly spelled out.
- Combining a long-term perspective with the short-term flexibility and detailed operational information can be achieved by adopting three year rolling plan cycles. Year one of the plans will be the most detailed one, while the successive years will focus on progressively broader outlines.

This article is an attempt to chalk out steps of planning cycle and planning procedures, which could realistically be applied to districts in the Punjab. With the existing political commitment for decentralisation, it can be hoped that health planning in the Punjab will be reorganised along the bottom up approach, giving due consideration to the needs of communities and views of peripheral health staff.

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A STUDY OF THE PATTERN OF RESORT FOR CHILD BIRTH IN A PERIURBAN SETTLEMENT

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Introduction

Pakistan has a maternal mortality ration of 5.6 per 1000 live births. This figure is one of the highest amongst the region. One of the reasons which can be ascribed for this figure is the poor access to health care available to women during pregnancy and child birth. This includes delivery at the hands of untrained personnel and other short comings of the health care delivery system, which are directly responsible for the high rates of pregnancy related complications. It has been estimated that 75% of deliveries take place at home at the hands of traditional birth attendants[1]. Untrained traditional birth attendants or Dais lack the knowledge and skills required for carrying out safe deliveries. The dais are seldom able to deliver hygienically, cannot provide adequate care for uncomplicated deliveries, or are able to recognize and refer complicated deliveries to higher level referral care facilities at the appropriate time. The inadequacy and inaccessibility of health facilities also contributes to the lack of care women receive from trained personnel during pregnaancy. The health facilities may not be accessible during emergencies, they may be staffed mainly by males, the quality of care being provided may be poor, the facilities may be closed most of the times due to unavailability of personnel or shortage of equipment. Lack of transport coupled with cultural restrictions that inhibit the movement of women even during obstetrical emergencies may be some of the other predisosing factors contributing to the enhanced maternal mortality figures of our country.

Maternal morbidity and mortality apart from having a direct bearing on the health of the entire family has both direct and indirect costs. The direct costs to health facilities for the treatment of complications of pregnancy and child birth are generally considered to be higher than the costs involved in preventing such complications in the first place. The indirect costs can be linked to the important role women play in economic productivity and social development of a nation.

It is therefore exigent to analyze the pattern of resort of women for the delivery of their children and factors that influence their decision.

Material and Method

A cross sectional study was conducted in a periurban settlement of Rawalpindi city to ascertain the pattern of resort of women for the delivery of their children. The factors influencing this decision were also assessed. These were:

(a) Socio demographic characteristics, including social status, education, cultural factors.
(b) Pregnancy history.
(c) Ante and post natal care.
(d) Pattern of resort.

Using an open ended semi structured questionnaire the above data was collected. The site of the study was Dhok Lakhan a Periurban settlement of Rawalpindi city having a total population of 3,284. Out of this there are 1,573 females and 1,711 males.

The study population was based on a random sample of 100 women (n = 100). These women were selected from a list of eligible women maintained by the lady health worker of the area. The inclusion criteria was the birth of a child in the last 5 years.

Results

Table 1a:

Home Delivery	
Delivery conducted by trained birth attendent	3%
Untrained birth attendent (Dai)	49%
Relative	7%
Total	56% (n = 100)

Table 1b:

Hospital Deliveries	
Govt. hospital (tertiary level care facility)	33%
Private hospital	9%
Due to entitlement	23.8%
Referral due to obstetrical complications	7.14%

Table 2: *Socio Demographic Characteristics*

Education of wife	48%
Education of husband	75%
Family System Joint	46%
Nuclear	54%

Table 3a: *Socio-economic Status*

Home Delivery n = 58	
Income of family less than Rs. 5000/-	62.7%
Income more than Rs. 5000/-	37.3%
Educational status (primary education)	27.59%

Table 3b:

Hospital Delivery n = 42	
Income of family less than Rs. 5000/-	54%
Income more than Rs. 5000/-	46%
Educational status (primary education)	69.059%

Table 4a:

Home Delivery n = 58	
Antenatal care	20%
Post natal	16%
Mean number of children	5.3%
Immunization status	52%

Table 4b:

Home Delivery n = 58	
Antenatal care	51%
Post natal	22%
Mean number of children	4.7%
Immunization status	61%

Discussion

The aim of the study was not to develop a hypothesis but to assess the various factors that influence the decision of women regarding place of delivery of their children. As the study shows the majority of women 58% opted for a home based delivery. Level of education and socio economic status was influencing this decision. Since 72.4% women who delivered at home were uneducated. In contrast women who opted for a hospital based delivery 69.05% were educated to atleast the primary level. Similarly the socioeconomic status has also an influencing effect as in the case of women who underwent hospital delivery 54% had a family income of more than Rs. 5000/- while in the other group only 37% of the people had an income above Rs. 5000/-.

The findings of the study clearly indicate that the problem of deliveries at the hand of untrained birth attendants still remains rampant. The major causes of maternal death can be attributed to hemorrhage, infection, hypertensive disorders, embolism, cardiac disease. Since the decision of women to undergo a home delivery may be accounted on grounds of socio cultural traditions economic status of the family, accessibility and availability of a health facility, factors which may be hard to alter, however efforts can be made to make home based deliveries safer if the following recommendations are given due consideration:

(a) **Training of the traditional birth attendants:** Traditional birth attendants are an important element of a safe motherhood strategy, because of their accepted role in the community and the value of much of their Traditional knowledge.
These birth attendants require to be retrained in basic skills, including the identification of problem pregnancies, safe management of normal deliveries, referral of problem cases, and elimination of unsafe traditional practices. The training should be appropriate to their level of motivation and education.

(b) **Developing linkages between the TBA's and the Health System:** By defining linkages and incorporating then into the health system TBA's can be recruited to act as agents of change. There is a need for establishing a joint collaborative system between the TBA's and the Lady Health Workers of the Prime

Minister's Programme for Family Planning Health Care.

The need for doing so is to diminish the development of mutual suspicious or rivalries between two workers. Instead both can work in harmony and augment each other's work. Such a system would allow the health sector to be able to monitor and supervise the activities of the TBA's and the able to discourage unsafe practices in a manner that would be readily adopted without opposition. Hence such supervision would be supportive guidance based on respect for the work being carried out by the TBA.

(c) **Establishing a well organized referral System:** The functional integrity of an efficient referral system would depend upon the training of the birth attendent / health worker, who can pick up the signs of an obstetrical emergency at an early stage. It also depends on availability and provided there. Availability and accessibility can be influenced by such factors as availability of transport and the number of such facilities (if the number of facilities is more the distance to be travelled would be less). There also must be an ambulance linkage between the first level and higher level care facilities.

In far off remote areas first level care facilities could be designated as obstertric waiting homes, where women with anticipated complication could be brought well before time and taken in an ambulance to a higher centre at the opportune moment.

(d) **Encouraging Institutional Deliveries:** This can be achieved by improving the quality of care already available at the health facilities. Quality is dependent upon working hours of the center, attitude of the staff, their technical competence, availability of equipment like medicines, anesthetics etc.

(e) **Encouraging the mass media to play a role in ensuring safe motherhood:** It must be emphasized that the safe motherhood strategy enocompasses the good health of the mother through out her life. The mass media can play an important role in changing norms and traditions, male attitudes towards women's health and encouraging women to adopt safer delivery practices. This would include stressing the need for timely ante and postnatal care.

Conclusion

Keeping in view the fact that home deliveries at the hand of untrained birth attendents still remain common place, strategies must be evolved for ensuring safer deliveries, so as to reduce the maternal mortality in our country.

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MATERNAL AWARENESS & NEONATAL OUTCOME FOLLOWING DIFFERENT TECHNIQUES OF GENERAL ANAESTHESIA FOR CAESAREAN SECTION

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One hundred and twenty mothers scheduled for elective Caesarean section under general anaesthesia were studied regarding awareness during anaesthesia and neonatal outcome. They were divided in 3 equal groups and three different techniques of general anaesthesia were employed. Group I mothers received 50% N_2O in O_2 before the delivery of the baby and 67% N_2O and 33% O_2 afterwards, supplemented with inj. pentazocine 30 mg given I/V after clamping of the cord. Group II mothers were given 0.5% halothane throughout alongwith N_2O and O_2 50:50 before the delivery of the baby and 60:40 afterwards. While in group III, 100% O_2 was given throughout the procedure with isoflurane 2% for the first 5 minutes, 1.5% for the next 5 minutes and 0.75% thereafter (overpressure technique). Apgar score of the neonate was assessed at 1 and 5 minutes time and mothers were interviewed 48 hours after operation regarding awareness during anaesthesia. The results revealed that the incidence of awareness was more in group I and neonatal outcome was better in group III.

Introduction

The phenomenon of peri-operative awarenes during anaesthesia has been recognised since 1844[1], but it still remains a mystery. By common usage, the term "awareness" refers to the situation where the patient is able to remember either being awake during an operation or having unpleasant dreams and hallucinations. The incidence of awareness is especially high in obstetric anaesthesia as the anaesthetist must choose a method which is least depressant for the newborn. A light general anaesthesia is usually given alongwith neuromuscular blocking drugs and narcotic agents are withheld. At the time of occurrence, the patient is usually paralysed and cannot indicate her feeling.

Awareness can be classified into the following groups.

(i) Concious aawareness with normal recall from long term memory

(ii) Concious awareness with grossly impaired recall of peri-operative events

(iii) Unconious awareness where some stimuli perceived by brain may be stored in long term memory but do not subsequently enter conciousness. Though the patient will not be able to recall peri-operative events but the high level stimuli may be stored in subconcious memory and influence subsequent behaviour.

(iv) Severely attenuated perception of stimuli by the brain with no registration in the long term memory, which is the ideal depth of general anaesthesia[2].

Awareness of events commonly occurs at the time of induction and intubation and at the end of operation if the patient becomes concious before muscle control returns.

It appears that anaesthetic agents impair memory consolidation and registration of events in long term memory. Amnesia is essentially the impairment of consolidation of events into memory. On the other hand, even under the influence of anaesthetic agents, sensory input from potent stimuli may be perceived. Intra operative awareness occurs wen auditory or tactile stimuli are intense. Unconciousness alone does not preclude awareness[1].

At present, the anaesthetist's main source of information on the depth of anaesthesia is the patient's somatic and autonomic responses to surgical stimuli. In the modern practice of anaesthesia, the responses are modified by neuromuscular blocking drugs and drugs affecting autonomic nervous system. Presence or absence of these responses does not correlate with concious awareness[4]. There is no clinical criteria by which the anaesthetist could be definite about the conciousness of the patient.

The objective of the present study was to find out the incidence of concious awareness in mothers undergoing Caesarean section with different techniques of general anaesthesia and to know the neonatal outcome.

Material and Method

One hundred and twenty ASA (American Society of Anesthesiologists) I and II mothers (aged 17-38 years) scheduled to have elective Caesarean section were included in this study. A crystalloid infusion was started after establishing the intravenous line with a large bore plastic cannula. No premedication was given except inj. metoclopramide (maxalon) 10mg i/v just before induction of anaesthesia.

After preoxygenation with 100% O_2 for three minutes, rapid-sequence induction was performed with inj. thiopentone sodium 4-5 mg /kg i/v and a 7.5 mm cuffed endotracheal tube put after giving inj. suxamethonium 1.5 mg/kg i/v.

The patients were then divided into 3 groups: In group I, 50% N_2 O in O_2 was given to the mothers before the delivery of the baby. After clamping of the cord, inj. pentazocine (sosegon) 30 mg i/v was given and the ratio of N_2 O: O_2 was changed to 67:33.

In group II, 0.5% halothane was given throughout the procedure alongwith nitrous oxide and oxygen in ratio of 50:50 before the delivery and 60:40 afterwards.

Group III mothers were given 100% O_2 throughout alongwith isoflurane 2% for the Ist 5 minutes, 1.5%, for the next 5 minutes and 0.75%, thereafter.

Non-depolarizing muscle relaxant used was pancuronium (pavulon) 4-6mg as bolus dose and 1-2 mg subsequently, if and when required after checking the train-of-four (T.O.F) response with the help of a peripheral nerve stimulator (ministim). Intermittent positive pressure ventilation (I.P.P.V) was maintanined throughout the procedure.

After delivery of the baby, inj. ergometernine (methergin) and oxytocin (syntocinon) were given intravenously as demanded by the obstetrician.

Apgar score of the neonzate was assessed at 1 minute and 5 minute time. At the end, residual effect of the muscle relant was reversed with inj. prostigmine 0.04 mg/kg mixe with inj. atropine 0.02 mg/kg I/v.

The mothers were interviewed 48 hours after operation. Specific questions regarding awareness of events during anaesthesia and pain experienced during surgery, if any, were asked.

Results

Incidence of maternal awareness during anaesthesia is shown in table I.

Table I: *Incidence of Awareness*

Group	No. of concious patients	Percentage
I	6	15%
II	--	--
III	--	--

In group I, 6 patients reported conciousness during aanaesthesia but only one out of these complained of pain. None of the patients in group II and III complained of awareness of events or pain during surgery, although one of the group II patients reported dreams.

Average Apgar score of the neonates is shown in table 2.

Average Apgar score was better in group III as compared to the other two groups. In this group of mothers N_2 O was avoided and 100% oxygen was given right from induction of anaesthesia.

In one case in group II, Apgar score of the neonate was less than 5 and resuscitation was required. But it was noted that in this case, U-D (uterine incision-to-delivery) interval was more than 90 seconds which might be the cause of low Apgar score.

Table 2 *Apgar Score of the Neonates*

Apgar score	Group I No. of patients	% age	Group II No. of patients	% age	Group III No. of patients	% age
8-10	36	90%	35	87.5%	38	95%
5-7	4	10%	4	10%	2	5%
< 5	—	—	1	2.5%	—	—

Discussion

Maternal awareness during general anaesthesia for operative delivery has always been a challenge for the anaesthetist. It demands a meticulous technique which, on one hand, is least depressant for the neonate and on the other hand, avoids the unpleasant situation of an wake but paralysed mother. The common causes of recall of intra-operative events include: poor or inadequate pre-anaesthetic medication; lack of amnesic agents; balanced anaesthetic techniques and injudicious use of muscle relaxants without an adequate state of unconciousness.

Painful memory is not much a problem as pain disappears in early stages of anaesthesia, so-called stage of analgesia. The commonest from of recall is auditory awareness, as hearing is the last of the central special senses to be obtunded[1].

Several studies have reported a high incidence of maternal awareness of surgery and birth with subsequent unpleasant experiences such as nighmares following nitrous oxide, oxygen, relaxant techniques for vaginal delivery or Caesarean section. The indidence appears to vary inversely with the concentration of Nitrous oxide[5].

In the present study, the incidence of awareness was 15% with N_2 O, O_2 and opioid technique and it was reduced to zero when a volatile anaesthatic agent like halothane or isoflurane was added.

The results are comparable to Warren et al and Abboud et al who gave 17% and 12% incidence of awareness respectively[5]. Bogod DG et al reported a 7% incidence of awareness in elective and 28% in emergency Caesarean section by using isolated forearm technique and lower oesophageal contractility[6]. Lyons G and MacDonald R, in their study of 3000 patients of Caesarean section reported 0.9% incidence of recall and 6.1% incidence of dreams[7]. Similarly Liu-WH et al[8] gave a low incidence of recall and dreams during operation, 0.2% and 0.9% respectively. McCrirrick A et al, by using an overpressure technique with isoflurane showed that hte patients are at less risk of awareness[9].

The results of these studies are varied so much because several methods have been described to detect awareness but none has yet been found to be totally reliable[10]. There is, therefore a need for development of better techniques to monitor depth of anaesthesia in paralysed patients. Until now, autonomic activity of an awake, paralysed and terrified patient like dilation of pupils, rapid bounding pulse, sweating, hypertension tachycardia and lacrimation are mostly relied upon[11]. But none of the above mentioned signs is a definite indicator of awareness.

Tunstall[12] originally employed an isolated arm technique to examine unconciouness during general anaesthesia. Russell[13] later suggested some modifications to enable the technique to be used for much longer periods. Until more research is done to evolve a fool-proof method to judge the depth of anaesthesia, the anesthetists could well be advised to add volatile anaesthetics and to avoid the injudicious use of muscle relaxants to minimize the trauma of awareness during anaesthesia to their patients.

Regarding the neonatal outcome, the results of the present study are comparable to those of Piggott et al[14] and Barake et al[15] who reported minimal need for neonatal resuscitation.

Conclusion

In conclusion, it can be said that use of volatile anaesthetic agents reduces the risk of awareness during anaesthesia. Although

traditional general anaaesthesia with low concentration of either halothane or isoflurane is effective to prevent conciousness, isoflurane given with overpressure technique almost guarantees unconciousness and there is no added risk of uterine relaxation.

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FACTORS LEADING TO INFANT DEATH
(Comparative Study of Two Villages of Punjab, Pakistan)

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Summary

A community-based survey was conducted to identify the factors contributing to infants' deaths in two villages of Punjab, with different environment and location. Study revealed that in Jallo Chak 63 families experienced live births, and two infants died during 1993 and the Infant Mortality Rate was32 per thousand live births. Six families with illiterate fathers and poor socioeconomic background experienced the two deaths of infants and the IMR amongst illiterate fathers was 333/ thousand live births. There were 22 families with illiterate mothers who had live births and two infant deaths; IMR amongst illiterate mothers was 91/ thousand live births. In Jallo Chak 57(90.47%) deliveries were conducted by untrained Dias. In Gunea Wala 32 families experienced live births, five (5) infants died during 1993 and the Infant Mortality Rate were 156/ thousand live births. 15 families with illiterate fathers had experienced 2 deaths whereas undermateric and postmateric experienced 2 and 1 infant deaths respectively. Families with illiterate mothers experienced all the 5 infant deaths the IMR amongst illiterate mothers was 200/ thousand live births. In Gunea Wala 28(87.50%) deliveries were conducted by untrained Dias. It was observed that the difference of mortality among these two villages was chiefly influenced by the environmental conditions and awareness about hygienic health habits through the male members of the families who are serving or have served the Armed Forces in the past.

Introduction

Infant mortality continues to be a challenging problem in Pakistan. It is a sensitive index of health condition of a community or a country. According to UNICEF, "Pakistan falls in a category of high infant mortality. The Infant Mortality Rate during the year 1994 was 95/ thousand live births. It is the probability of dying between birth and exactly one year of age"[1]. There are many causes of high mortality in Pakistan, viz.

1. Conditions of mothers, which results in death of babies.
2. Circumstances during natal and neonatal period resulting in loss of babies.
3. Causes p+resent in the babies.

The major avoidable factors, contributing towards high infant mortality such as "illiteracy, nonutilization of health services, health habits and unhygienic environments"[2]. Two study areas have been selected Jallo Chak near Dina (District Jhelum) and Gunea Wala near Wazirabad (District Gujranwala). The majority of the residents of Jallo Chak following the traditions of their forefathers prefer to serve the Armed Forces. Therefore the families residing in the area are wellversed with the hygienic health habits and they have better knowledge of health education as compared to other rural areas. Being hilly area the environmental status of Jallo Chak was better than the residents of Gunea Walla. Education and awareness about hygienic environment effects directly as well as indirectly through improved utilization of services.

Maccormacks' study on education of mothers proves that "There is direct relationship between social investment in women and survival chances

of their infants"[3]. This statement has been supported by the World Bank Report 1990. The report conveys that, "One years of mother's education has associated with 9% reduction in under five mortality" (World Bank Report, 1990)[4]. A multinational analysis of risk factor in rural areas of Bangladesh revealed that, "Children of mothers without formal schooling and those from poor households experienced 1.83 time high risk of death (due to measles) than their counterparts whose mothers had at least one year of schooling and those from economically better off households respectively"[5].

Objectives of the Study

To collect and compare the:

(a) Infant Mortality Rate of two villages

(b) underlying avoidable factors leading to infant death

(c) impact of educational status of parents on infant mortality and

(d) effect of environment and locality on infant death.

Material and Methods

A retrospective cross-sectional survey of two villages Jallo Chak and Gunea Wala conducted and related information for the year 1993 was collected by filling in the proforma through house to house survey, based on recalled obstetric history. A survey team of five students of Social Work Department of the Punjab University trained for this purpose.

Table 1: *Related Information about Population in the Study Areas.*

Informations	Jallo Chak (District Jehlum)	Gunea Wala (District Wazirabad)
Total Population	2273	2923
Total Families	329	350
Family Size	6.7	8.27
No. of Families having Infants (0-1 year) during the year 1993 (live births)	63	32
No. of Infants Died during 1993	2	5
Infant mortality rate / 1000 Live births	31.75 per 1000 live births	156.2 per 1000

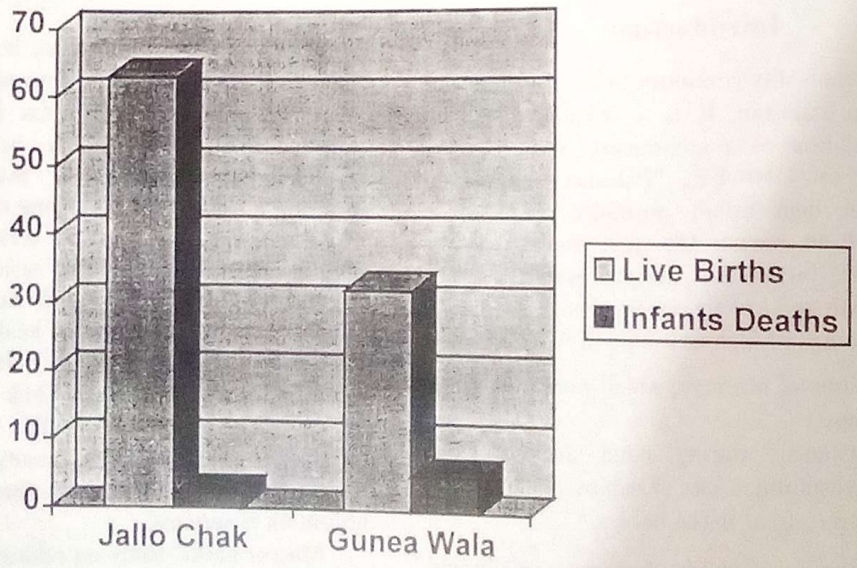


Fig 1: Live Births and Infant Deaths in Two villages

Table 2: *Socioeconomic Information about the Study Area*

No.	Informations	Jallo Chak	Gunea Wala
1.	(a) Primary schools	2	2
	(b) Secondary schools	1	1
	(c) High schools	Nil	Nil
2.	Clinics	Nil	3
3.	Family Welfare Center	Nil	1
4.	Handicraft Center	Nil	1
5.	Dias	2	5
6.	Distance of Basic Health Unit to The Center of the village	5 Km.	1 Km

Results Statistical Analysis

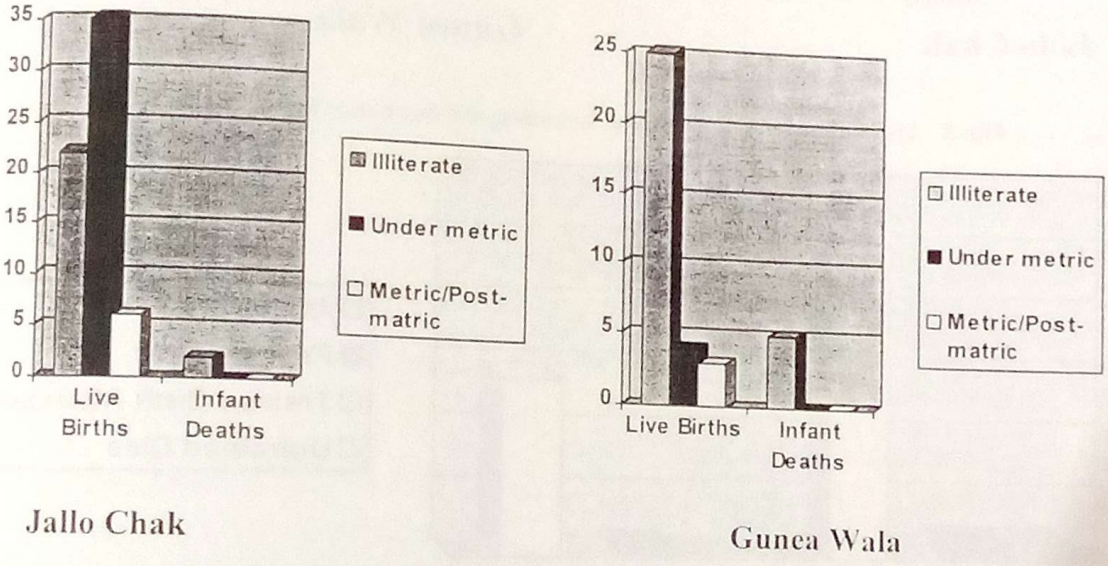
There were 329 families residing in Jallo Chak in 1993. Sixty-three (63) families experienced live births and 2 infants died in the year 1993. The Infant Mortality Rate of Jallo Chak was 32/ thousand live births. Whereas in Gunea Wala where 350 families were residing had 32 live births during 1993 and experienced five (5) infant deaths. The Infant Mortality Rate was 156/ thousand live births.

Dicussion And Conclusion

The survey was conducted in two villages of Punjab, Pakistan to identify the impact of education of parents on mortality of infants and to

Table 3: *Infants Deaths as Related to Educational Status of Mothers.*

Educational Status	JALLO CHAK			GUNEAWALA		
	No. of live Births	No. of infant deaths	I.M.R. per 1000 L.B.	No. of live births	No. of infant deaths	I.M.R.per 1000 L.B.
Illiterate	22	2 (100%)	90.09	25	5 (100%)	200.00
Under matric	35	0	0	4	0	0
Matric / Post-matric	6	0	0	3	0	0
Total	63	2	32 per 1000 L.B.	32	5	156 per 1000 L.B.



Jallo Chak

Gunea Wala

Fig. 2: Live Births and Infants Deaths According to Educational Status of Mothers

Table 4: *Infants Deaths as Related to Educational Status of Fathers*

Educational Status	JALLO CHAK			GUNEAWALA		
	No. of live Births	No. of infant deaths	I.M.R. per 1000 L.B	No. of live births	No. of infant deaths	I.M.R.per 1000 L.B
Illiterate	6	0	0	15	2	133 per
Under matric	18	2	[illegible] per 1000 L.B	5	2	400 per
Matric / Post-matric	39	0	0	12	1	83 per
Total	63	2	32 per 1000 L.B	32	5	156 per 1000 L.B

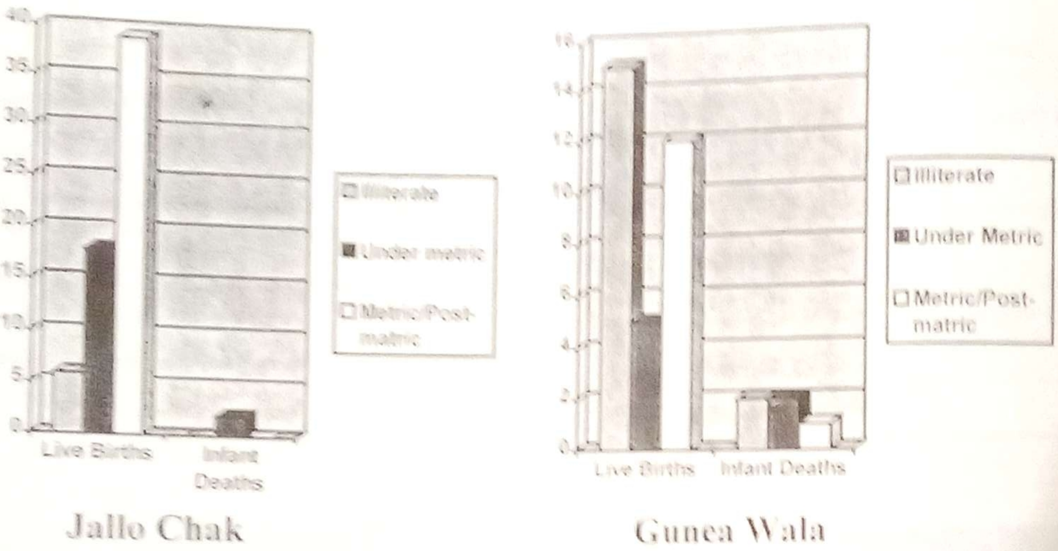


Fig. 3: Live Births and Infants Deaths According to Educational Status of Fathers

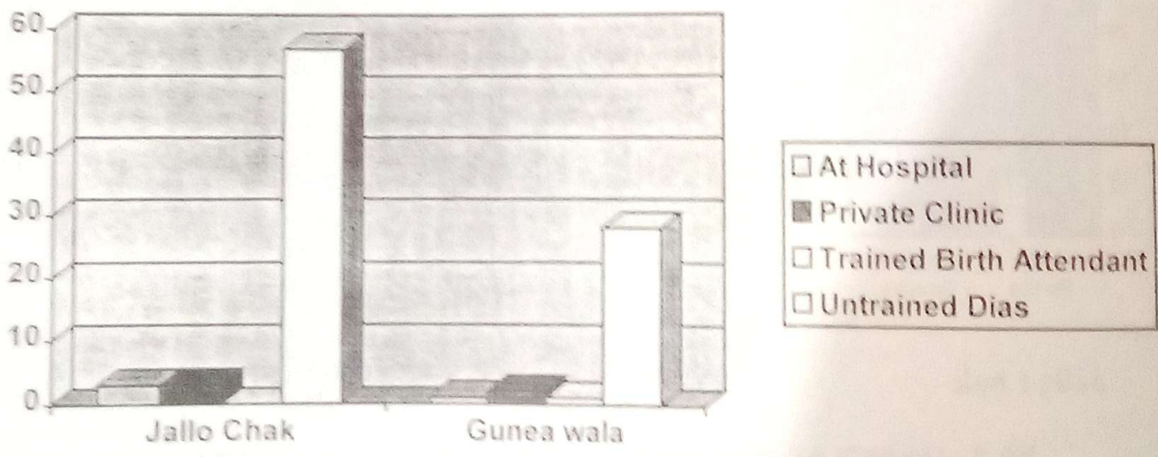


Fig. 4: Deliveries Conducted

compare the avoidable causes leading to infants' death. It was observed that in both the villages only in the families with illiterate mothers experienced infant deaths. But it was also very much evident that in Jallo Chak only 2 infants died out of 63 live births during 1993 and the Infant Mortality Rate was 32 / thousand live births. Whereas in Gunea Wala out of 32 live births five (5) infants died and Infant Mortality Rate was 156 / thousand live births. The ratio of mortality is 1:5, which is quite alarming. To find out the factors leading to this difference in mortality rate it was observed during interviewing and while filing in of the proformas that almost all the families residing in Jallo Chak have their male members in the Armed Forces. The people of this area have been in the Armed Forces for the last nine decades. These personals are well versed with personal hygiene and have fair amount of health knowledge, which was also evident from their houses and day to day livings. In Gunea Wala the situation is all together different. Inspite of more modern facilities than Jallo Chak and more educated people, their living standard was poor and hygienic environment very low.

It was also observed that almost all the deliveries (88) were conducted in the homes by untrained Dias. Only seven (7) were conducted at government / private hospitals. This shows that the utilization of natal services in these areas is very low because of lack of trust on these services. There are two NGOs (Non Government Organizations) working in Gunea Wala but their progress as far as infant mortality is concerned is zero.

Recommendations

Inorder to reduce the infant mortality rate the NGOs, Mass media and Social Welfare Organizations pay special attention in making the healthy environment. Lack of awareness about the hygiene and cleanliness is the main cause of infant mortality. From the study it is evident that formal education alone cannot change the community toward healthy environment. Informal information about the basic health knowledge should be provided by the government, NGOs, Mass media and welfare organizations.

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Table 4: *Infants Deaths as Related to Educational Status of Fathers*

Educational Status	JALLO CHAK			GUNEAWALA		
	No. of live Births	No. of infant deaths	I.M.R. per 1000 L.B.	No. of live births	No. of infant deaths	I.M.R.per 1000 L.B.
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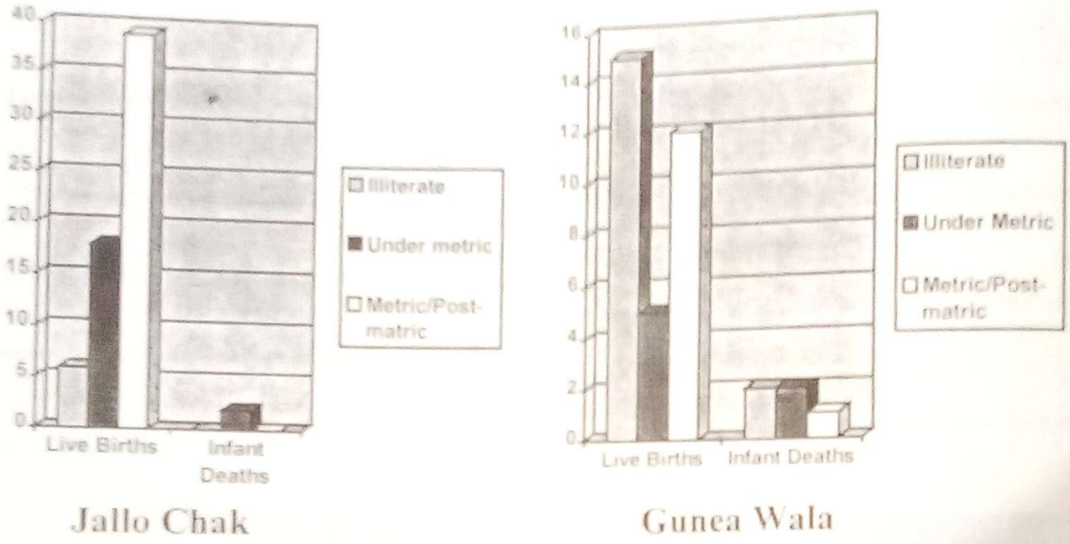

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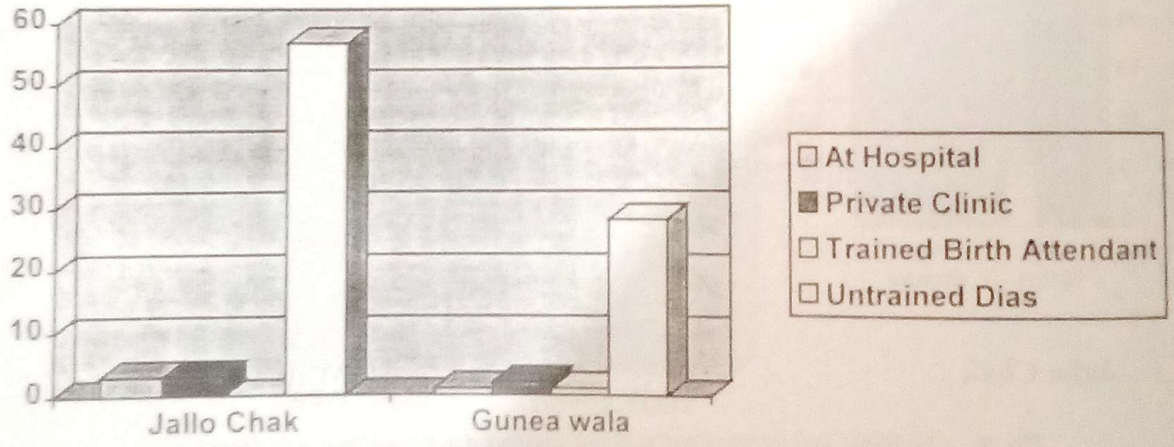

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FOOD HANDLERS: POTENTIAL CARRIERS OF SALMONELLA

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Various types of food handlers were studied to find out the carriers of Salmonella among them. Significant number of stool samples of persons with previous history of typhoid fever were found to be positive for Salmonella species. While significantly lower number of Salmonellae were isolated from food-handlers with previous history of receiving typhoid vaccine. Therefore the given data indicates that vaccination is a good preventive measure. As the present study confirms that the food-handlers, are potential carriers of Salmonella species, therefore, amendment in existing legislation is needed for strict microbiological surveillance of food handlers under the supervision of microbiologists.

Introduction

Food is a basic human need. Food-borne illnesses are major public health concern worldwide[1]. There are three main routes by which micro-organims reach our food, namely raw food stuffs and ingredients, the food-handlers and the environment[2-3].

In many countries it is a legal requirement for food-handlers to be medically examined before employment, but the extent of the examination and the frequency of re-examinations vary from one country to another[4].

Enteric bacteria have been implicated as the major cause of food or water borne diseases in countries all over the world[5-6]. Enteric fever caused by Salmonella group of organisms is still endemic in most of the developing countries including Pakistan. It is a common cause of morbidity and mortality in these areas[7-10].

Salmonellae are zoonotic organisms carried in the intestinal tract and associated organs of most farm and wild animals[11]. The effluent from infected animals and man is an important source of contamination of the environment and the food chain[12]. Flies and cockroaches can also act as vectors of Salmonella infection[13-14].

Salmonella typhi carriers play a major role in typhoid fever transmission than do people with disease symptoms[10-13-19]. A chronic typhoid carrier is a person who is excreting typhoid bacilli in stool or urine for more than period of one year[20-21]. Two to five percent of persons who develop clinical or sub-clinical infection with Salmonella typhi become chronic billiary carriers and excrete the pathogens in their stool[17-22-23]. These people are unaware of their infection, take no special precautions and move normally from place to place spreading their enteric pathogens[24-25].

Food-handlers are the persons whose work involves touching of unwrapped food, which is then consumed raw or without further cooking. Food-handlers may transmit pathogens passively from a contaminated source for example by placing raw poultry in a refrigerator from which the organisms can be transmitted to the cold cooked meat, that is to be eaten without further heating[26].

Food-handlers constitute an important group in the food chain and keeping these things in view it would be unwise to permit a person harbouring the pathogens to handle the food[27-28]. Therefore the present study was planned to study the food-handlers working in different parts of Lahore as regards the carrier state of Salmonella organism. This will help to assess the extent of the problem and its control later on.

Materials and Methods

Stool specimens were collected from 300 food-handlers, irrespective of age, sex and any gastrointestinal symptoms. Food-handlers included

were housewives, street vendors and catering staff of various hostels of Allama Iqbal Medical College, Lahore.

Stool samples were inoculated according to their consistency. Formed or semiformed stool samples were mixed with sterile 0.1% peptone water to form thick suspension, and watery stool samples were inoculated as such. MacConkey agar medium, Salmonella Shigella agar medium, Xylose Lysine Deoxycholate agar medium and Selenite F-broth were used for primary inoculation. Organisms were identified by standard biochemical tests. Serotyping of Salmonella was carried out using immune sera (Seiken).

Results

The food-handlers included in the study were 100 housewives, 100 street vendors and 100 catering staff (Fig. 1). Based on the history of typhoid fever among 28 street vendors Salmonellae were isolated from 8 cases while among the 72 street vendors without history of typhoid fever, only 2 cases were positive for Salmonella species ($P < 0.001$). Among the catering staff 28 persons gave history of typhoid fever while Salmonella species were isolated from 4 persons. The remaining 68 persons did not have any history of typhoid fever and among these 4 cases of Salmonella were isolated. Among the group of housewives 43 had history of typhoid fever while 10 cases of Salmonella were isolated from them. Six among 57 housewives without history of typhoid fever had positive cultures for Salmonella (Tables 1 and 2).

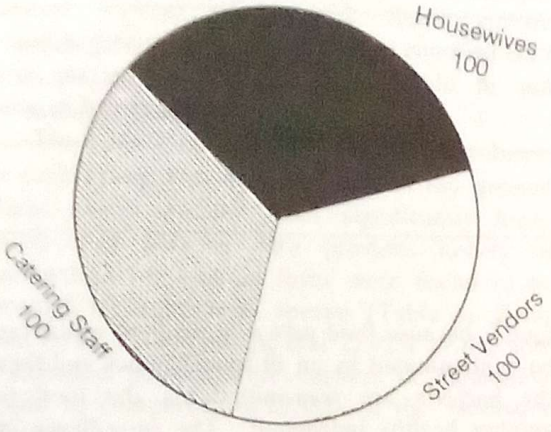

Table 1 *Distribution of 300 Food Handlers Accordings to History of Typhoid Fever**

Group	History of typhoid fever	
	Present	Absent
Street Vendors (n = 100)	43	57
Catering Staff (n = 100)	28	72
Housewives (n = 100)	43**	57
Total	**114**	**186**

*Patients claimed their fever to be typhoid on grounds of prolonged fever over two weeks and the diagnosis suggested by treating medical personnel.

**$P < 0.05$ (significant) Housewives compared with street vendors and catering staff

Table 2: *Distribution of Positive Isolates of Salmonella Species According to History of Typhoid Fever*

Group	Positive H/o typhoid fever		Negative H/o typhoid fever		P value
	Salmonella isolated	Salmonella not-isolated	Salmonella isolated	Salmonella not-isolated	
Street Vendors (n = 100)	8	21	2	69	P < 0.001 Significant
Catering Staff (n = 100)	4	24	4	68	NS
Housewives (n = 100)	10	33	6	51	NS
Total (300)	22	78	12	188	

Key: NS = Not significant

Stool samples from significantly lower number of persons with previous history of vaccination for typhoid fever were found to be positive for Salmonella species. Among the street vendors 37 persons gave previous history of typhoid vaccine. All of these were negative for Salmonella. While among the 63 street vendors without history of typhoid vaccine 10 were positive for Salmonella ($P < 0.05$). Sixty persons among the catering staff gave history of typhoid vaccine and one of them was positive for Salmonella while among the 40 persons without history of typhoid vaccine 7 cases were positive for Salmonells ($P < 0.02$). Among the 38 housewives with history of typhoid vaccine 2 were positive on culture and 14 out of the 62 without history of typhoid vaccine were positive ($P < 0.05$) (Table 3).

Among the 16 isolates from housewives, 13 were Salmonella typhi, 2 Salmonella paratyphi A and one Salmonella paratyphic B. While 10 isolates from street vendors revealed 6 Salmonella typhi and 4 paratyphi A. Among the 8 catering staff 7 isolates were of Salmonella typhic and one of Salmonella paratyphi B (Table 4).

Table 3: *Distribution of Positive Isolates of Salmonella Species According to History of Typhoid Vaccine*

Group	Positive H/o typhoid vaccine		Negative H/o typhoid vaccine		P value
	Salmonella isolated	Salmonella not-isolated	Salmonella isolated	Salmonella not-isolated	
Housewives (n = 100)	2	36	14	48	P<0.05 Significant
Street Vendors (n=100)	0	37	10	53	P<0.05 Significant
Catering Staff (n=100)	1	59	7	33	P<0.05 Significant
Total (300)	3	132	31	134	

Table 4: *Serotypes of 34 Salmonella Positive Isolates from 300 Food-Handlers*

Group	Salmonella typhi	Salmonella paratyphi A	Salmonella paratyphi B
Housewife (100)	13	2	1
Street vendors (100)	6	4	0
Catering Staff (100)	7	0	1
Total (300)	26	6	2

Discussion

Food borne disease have always been a great problem for mankind[25]. Millions of people all over the world have been killed or debilitated due to food borne diseases[30-32]. The control of food borne diseases requires not only surveillance of the food stuff but of the people involved in handling the food[25], because food acts as a medium which can be contaminated by an ill food handler and then the bacteria are transmitted via the food to another healthy individual[29]. The surveillance of food borne diseases leads to the deveopment of preventive and control measures based on the problems commonly encountered in the community, region or country[33]. From the surveillance data one can find out the prevalent food borne diseases of a community and the common causative agents[25].

Persons infected with Salmonella typhi usually present with pyrexia of unknown origin. However, the laboratory diagnosis requires bacteriological and/or serological evidence of infection[34]. In the present study among 300 food-handlers 114 persons gave history of typhoid fever while Salmonella species were isolated from 22 persons. The remaining 186 persons did not have any history of typhoid fever and among these 12 cases of Salmonella were isolated (Tables 1 and 2).

Khan and Haleem[7] carried out a study on 404 asymptomatic hospitalized and staff persons of Jinnah Postgraduate Medical Centre, Karachi to find out the prevalence of carriers of Salmonella and Shigella. They found 15 cases to be carriers of Shigella and 4 cases to be carriers of Salmonella. Among the Salmonella carriers 2 had past history of gastrointestinal disorders varying from 4 to 8 months. In 2 cases there was history of enteric fever. Shabbir et al[35] carried out a study on 482 apparently healthy subjects of Multan city to determine carrier state of Salmonella typhi. They reported that 48 subjects had history of typhoid fever in the past and among these 34 (i.e. 70.8%) subjects were carriers of Salmonella typhi. Zafar and Ara[36] have reported that 49.01% of the carriers of Salmonella typhi had past history of typhoid fever as compared to 17.82% who never had typhoid fever.

Chaudhry et al[37] carried out a study on apparently healthy catering servicemen of Punjab Medical College, Faisalabad. Stool culture revealed that eight percent of the catering staff were carriers of Salmonella paratyphi A and Salmonella paratyphi B.

The history of typhoid vaccine from subjects in each group was also obtained in the present study. Stool samples from significantly lower number of persons with previous history of vaccination for typhoid fever were found to be positive for Salmonella species (Table 3). Zafar and Ara[36] have reported that 27.92% of the non-vaccinated persons were carriers of Salmonella typhi as compared to 13.33% of the vaccinated persons.

Salmonella species were isolated from 16 isolates from housewives, 13 were Salmonella typhi, 2 Salmonella paratyphi A and one Salmonella paratyphi B. While 10 isolates from street vendors revealed 6 Salmonella typhi and 4 Salmonella paratyphi A. Among the catering staff 7 isolates were of Salmonella typhi and one of Salmonella paratyphi B (Table 4). Khan and Haleem[7] have reported 3 out of 4 carriers of Salmonella were housewives. Lin et al[38] have reported that an 18 year old asymptomatic female employee who was a food handler was responsible for 10 cases of typhoid fever that occurred between August and September 1986 in the vicinty of Silver spring in USA. Shrimp salad served at the restaurant was implicated as the source of infection. Lanata et al[39] carried out a study in females food handlers at Peru and reported that 15% among 1931 subjects were carriers of Salmonella typhi. According to Ajmal[40] the percent positivity of human faecal samples from various sources for various Salmonella species was 2.5%.

It is suggested that stool samples of food handlers should be checked by proper public health personal for the presence of microbiological pathogens. Significantly lower number of Salmonellae were isolated from food handlers with previous history of receiving conventional vaccine (injection T.A.B). Therefore it is advised that the new available vaccine should be used for prevention against Salmonella infections e.g. capsule Ty2la or injection Vi-capsular polysaccharide subcutaneously or intramuscularly.

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ANALYSIS OF ABNORMAL EEG WAVES IN EPILEPTIC PATIENTS; A STUDY OF 93 ELECTROENCEPHALOGRAMS

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Summary

99 abnormal electroencephalograms of epileptic patients were studied and analyzed carefully. It was observed that generalised epilepsy was more common as compared to focal epilepsy. The EEG in generalised epilepsy exhibited delta waves in 90% patients, theta waves in 70% patients and spike waves confined to temporal or frontotemporal regions. It was also noted that epilepsy was common in males and in children.

Introduction

Epilepsy afflicts at least 1 to 2 million peoples in the united states and about 20 to 40 million peoples world wide[1]. In most studies, the overall incidence of epilepsy has been found to lie between 20-50 cases per 100,000 persons in general population[1]. It is therefore, a major public health problem.

Electroencephalography is the investigation of choice in patients with epilepsy. It not only helps to confirm the diagnosis but also help us to characterize the type of seizures[2].

We have studied EEG abnormalities in 93 epileptic patients in order to find the type of seizures and abnormalities in wave form.

Method and Materials

We have analyzed the EEG record of 259 patients suffering from various disorders referred for electroencephalographic studies to Neurology Department of Mayo Hospital, Lahore during the year 1994 (Table 1). The record of 99 patients of clinically diagnosed epilepsy was separated and analyzed carefully. The electroencephalograms of these patients were obtained by a technician who was primarily responsible for the entire procedure. EEG consisted of 50 pages each representing 10 seconds in time. The criteria for diagnosing various EEG waves are given below;

(i)	Alpha waves	asymmetrical, 8-13 per second, 50 microvolt.
(ii)	Beta waves	faster than 13 per second and low amplitude (10-20 microvolts).
(iii)	Theta waves	slow waves, 4-7 per second, high amplitude (50 to 350 microvolts).
(iv)	Delta waves	very slow waves, less than 4 per second, high amplitude (50 to 350 microvolts).
(v)	Spike waves	very high voltage, more than 350 microvolts.

The criteria for diagnosing various seizures are given below:

Focal seizures	EEG abnormality confined to localized area of brain.
Generalised seizures	EEG abnormality which is diffuse and involves both cerebral hemispheres.

Results and Discussion

259 patients of various disorders were referred for EEG during the year 1994 to Neurology Department, Mayo Hospital, Lahore. 99 patients had epilepsy, 17 were suspected to have psychogenic fits, 112 patients had headache and

were suspected to be suffering from SOL (Table 1).

Table 1: *Indications for referral for EEG*

Disorder	No. of patients (n = 259)
Epilepsy	99
Headache	112
Encephalitis	17
Fever with fits	16
Psychogenic fits	3
Vertigo	11
Head injury	1

Out of 99 clinically diagnosed epileptic patients, 93 had abnormal electroencephalogram. Analysis of the record of these patients showed that 64 were male subjects and 29 females. Age of the patients varied from 1 year to more than sixty years. Depending upon age, the patients were divided into 7 groups. Group 1 (age 1-10 years) consisted of 45 patients, group 2 (age 11-20 years) had 24 patients, group 3 (age 21-30 years), 10 patients, group 4 (age 31-40 years), 1 patient, group 4 (age 41-50 years), 2 patients, group 6 (age 51-60 years), 4 patients and group 7 included patients more than 60 years and consisted of 7 patients (Table 2).

Table 2: *Epidemiological data of the epileptic patients (n = 93)*

Sex		
	Male	64 (68%)
	Female	29 (32%)
Age (in years)		
	1-10	45 (46%)
	11-20	24 (25%)
	21-30	10 (11%)
	31-40	1 (2%)
	41-50	2 (3%)
	51-60	4 (1.5%)
	> 60	7 (8%)
Type of epilepsy		
	Generalised	84 (90%)
	Focal	9 (10%)

In 9 electroencephalograms the abnormal wave forms were confined to a localized area of brain denoting focal epilepsy, while in 48 electroencephalograms the abnormal EEG pattern was noted in both cerebral hemispheres indicating generalised seizure activity (generalised epilepsy).

The most frequent abnormal EEG waves noted in generalised epilepsy were Theta and delta waves. Theta waves were observed in 70% and Delta waves noted in 90% of the patients, while spike waves were present only in 10% patients (Table 3).

Table 3: *Abnormalities in EEG wave in epileptic patients.*

Type of epilepsy	Abnormal waves
Generalised	
	Theta waves (70%)
	Delta waves (90%)
	Spike waves (10%)
Focal epilepsy	
	Slow waves (100%)
	Spike waves (33%)

It is to be noted that all these electroencephalograms were obtained interictally.

In nine electroencephalograms which showed focal abnormality the EEG exhibited unilateral slow waves in all the patients and spike waves only in 3 patients. This abnormal EEG activity was confined to temporal lobe in 6 patients and frontotemporal lobes in 3 patients.

Results of our limited study showed that incidence of epilepsy vary considerably at different ages; Incidence is highest in early childhood, fall in middle adult life and rise again in late adult life. Nelson and Ellengerge[4] had also shown that disease is more common in children than in adults with a prevalence rate of 8 per 1000 children below the age of 7 years.

As regards the sex, This study has shown that epilepsy is more common in males as compared to females (male : female ration 68:32). This is also in agreement of Shorvon data[5].

Our study has clearly indicated the abnormalities in EEG waves in two types of epilepsiy i.e. generalised and focal. In generalised

epilepsy the most common abnormal EEG waves were slow waves (delta and theta) and these were scattered over both hemisphere. Spike waves were observed only in 10% cases, on the other hand fast waves were uncommon. While describing epileptic syndromes in childhood, Jean Aicardi[6] has found slow waves in about all the cases. Our data is also in consistent with the findings of Marc A. Dichter[7] who have described the slow waves in cases of generalised epilepsy. Patients with focal epilepsy have EEG that exhibit unilateral spike, sharp waves or slow wave discharge over temporal or frontotemporal regions both interictally and during seizures[7]. Our data has also favoured these findings.

This study has clearly indicated that generalised seizures are more frequent than focal seizures. Shorvan[5] has analyzed his own data of 3600 epileptic patients and has found partial seizures only in 700 patients while 2000 patients showed generalised epilepsy. These results indicate that generalised epilepsy is more common as compared to partial epilepsy.

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QUALITY ASSURANCE
A PRACTICAL FRAMEWORK FOR HOSPITALS

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Summary

Quality Assurance in health care has become very important because of economic, social, political and professional reasons. This paper discusses the contemporary concepts on the subjects and develops on it a Conceptual Model for Quality Assurance. This model is then incorporated into a practical framework as a ready-made tool for hospital managers.

Introduction

1. What is Quality Assurance

Quality Assurance include all methods of performance assessment and readjustment, to improve health care and as a result the health and welfare of people. It is an organized activity through which information is obtained about the performance of a health care organization, the pattern of performance is evaluated, the reasons for the observed pattern are identified, action taken to improve care, and verify the effects of that action on performance.

Quality Assurance is a continuing activity focusing on identification of 'best practices' and assuring that these are being practiced.

2. Current Interest

Economic, social, political and professional are the basic reasons for current emphasis on quality assurance initiatives[1].

Economic: Rising costs of medical care and increased government funding.

Social: Increased consumer expectations with a concurrent rise in malpractice suits.

Political Demonstrated poor level of quality, proliferation of service institutions and market orientation.

Professional Rapid advances in medical science and professional psyche of providing best possible care.

3. Concepts in Quality Assurance[2,3,4]

Process: A set of inter-related resources and activities which transforms inputs into outputs. Resources may include personnel, facilities, equipment, technology and methodology.

Supply chain: A set of inter-related processes that accepts inputs from suppliers, adds value to these inputs, and produces outputs for customers. Input and outputs can be either products or services. Customers and suppliers can be either internal or external to the organization.

Quality improvement: Actions taken throughout the organization to increase the effectiveness and efficiency of activities and processes to provide added benefits to both the organization and its customers.

Quality losses: Losses caused by not realizing the potential of resources in processes and activities. Some examples of quality losses are the loss of customer satisfaction, loss of opportunity to add more value for the customer, the organization or society, as well as a waste of resources . Quality losses are a subset of quality costs.

Preventive action: An action taken to eliminate the causes of a potential nonconformity, defect or other undesirable situation in order to prevent occurrence.

Corrective action: An action taken to eliminate the causes of an existing nonconformity, defect or

other undesirable situation in order to prevent recurrence.

Criterion: Attribute of structure, process, or outcome capable of leading to an inference about quality.

Standard: A specific, quantitative measure that defines goodness.

4. Principles of quality improvement

The quality of an organization's products, services and other outputs is determined by the satisfaction of the customers who use them and results from the effectiveness and efficiency of the processes that create and support them.

Quality improvement is achieved by improving processes. Every activity or item of work in an organization comprises one or more processes.

Quality improvement is a continuous activity, aiming forever higher process effectiveness and efficiency.

Quality improvement efforts should be directed towards constantly seeking opportunities for improvement, rather than waiting for a problem to reveal opportunities.

Correcting process outputs reduces or eliminates a problem which has occurred. Preventive and corrective actions eliminate or reduce the causes of a problem, and hence eliminate or reduce any future occurrence. Thus, preventive and corrective actions improve the processes of an organization and are critical to quality improvement.

5. Attributes of Quality in Health Care

Effectiveness: The ability to attain the greatest improvements in health now achievable by the best care.

Efficiency: The ability to lower the cost of care without diminishing attainable improvements in health.

Optimality: The balancing of costs against the effects of care on health (or on the benefits of health care, meaning the monetary value of improvements in health) so as to attain the most advantageous balance.

Acceptability: Conformity to the wishes, desires, and expectations of patients and responsible members of their families.

Legitimacy: Conformity to social preferences as expressed in ethical principles, values, norms, mores, laws, and regulations.

Equity: Conformity to a principle that determines what is just or fair in the distribution of health care and of its benefits among the members of a population.

The Conceptual Model For Quality Improvement

This model is based upon Donabedian's systems approach[2], British Standards TQM approach[3,4] and Deming's PDCA cycle[5].

		System Components for Quality Assurance		
Quality Assurance Process	**Policy and Strategy**	**Resource Inputs**	**Organizational Processes**	**Service Outputs and Achievement of Goals**
Assess the System	Mission Commitment	Structures / Resources & their organization Wastes	Communication and information flows Process of delivery of care-Promotive, Preventive, diagnostic, curative and rehabilitative practices Wastes	Improvement in Care delivered and health status Consumer satisfaction

Quality Assurance Process	Policy and Strategy	System Components for Quality Assurance: Resource Inputs	Organizational Processes	Service Outputs and Achievement of Goals
Compare with Norms or Standards	Management Audit measures	Standards for structures and organizational arrangements (Organizational Audit measures)	Patient care guideline/ standards	Effectiveness Efficiency Measures of consumer satisfaction
Assert Reasons for Variation	Political	Resource scarcity, rising costs	Training Working environment Leadership and motivation	Consumer perceptions, expectations Managerial and Technical capacity
(Identification of causes)	Social Economic	Inappropriateness	Internal and External Supplier / Consumer behaviour	Change in Environment
Take Action **(Developing and implementing solution)**	Putting the consumers first Anticipating and knowing their expectations	Economic of resources Readucing wastes Containing costs Appropriate selection and use	Getting the service 'right first time' Training Staff empowerment Reinforcement of good performance. Enhancing communication	Meeting and exceeding consumer expectations
Verify Action	Supervise, monitor, review and appraise results			
Sustain the Gains in Quality	Improve mission, strategies and objectives Repaet the "*best practices*" and other lessons learned			

Developing Quality Assurance System

1. Policy and Strategy

Mission. Establish a mission statement, institutional objectives, strategy for achieving objectives and a service plan.

Commitment. Have visible, sustained commitment starting from the hospital manager and extending to every member of the organization.

Unit objectives. Establish and maintain the roles, responsibilities and objectives for each level and unit of the organization to support the mission and institutional objectives.

Leadership. Provide Leadership through personal example.

Management system. Establish, audit and keep under review, an effective management system.

Information system. Establish an effective planned information system throughout the organization.

Communications. Establish good communications internally and externally with suppliers and customers.

Communications should be planned both vertically between hospital manager and staff, through all levels and horizontally between the processes (interactions between service consumers and service providers) and between the process owners (service providers) and their suppliers and customers whether internal or external to the organization.

2. Resource Inputs

Appropriateness. Identify and use appropriate human, material and knowledge resources.

Wastes. Minimize wastes in human, material and time resource use.

3. Organizational structure & processes

Organization structure. Establish an effective organizational structure geared towards quality improvement.

Working environment. In addition to the physical environment of the work place the relationship between the individual and the organization and other employees should be structured so that each individual, team, department of a process or sub-process is aware of its contribution to the mission statement and the planned methods by which it can effect improvements. Create a culture for quality improvement.

Process Guidelines and standards. Establish measures of performance of individuals or teams involved in each process related, where possible, to internal or external customer satisfaction. Develop diagnostic and case management guidelines through involvement of care providers i.e. clinicians, nurses and others.

The establishment of improvement requires measurement.

Improvement objectives. Improvement goals should be closely integrated with the institutional objectives.

Improvement plans. Establish plans for improvement of quality of patient / client care and customer satisfaction at all levels.

Monitoring. Set system for monitoring of process of care (e.g. Medical Audit) to ensure that the care is being provided according to established guidelines

4. Service outputs

Measure. Improvement in Care delivered and health status

Assess. Consumer satisfaction

Quality Assurance Process

The ways of adopting and implementing these guidelines depend upon factors such as the culture, size, nature of the organization, the types of or services offered, and the customer needs served. Therefore, any hospital should develop an improvement process suited to its own needs and resources.

1. Assess the system Components

Identify any situation where there is an opportunity for improvement.

2. Compare with norms and standards

Define the opportunity for improvement.

3. Assert reasons for variation

Identify the cause(s) of the situation requiring improvement.

4. Take action

Devise possible solutions.
Select preferred solution.
Plan the implementation.
Implement the plan.

5. Verify action

Reviewing measures made, to determine the actual improvement in the process against goals or expectations.

Determining why improvements did not occur as expected.

Reviewing the use of the tools and framework, to find how well they were applied and how their use may be improved.

Holding a general project review of the success of the overall project to determine "*best practices*" and other learning points.

6. Sustain the gains in quality

Standardizing the solution, writing it up as a normal operating procedure and spreading it to other areas.

Addressing the cause of the lack of success, to prevent it recurring.

Identifying additional improvements that may be made in the future.

Sharing the results with others Repeat the "*best practices*" and other lessons learned.

Practical Framework for Hospital[7]

Activity	Method	Output	Responsibility
Development of Mission and Strategy			
Mission, Commitment and institutional objectives	Meeting and discussion to analyze the existing and potential quality elements to be incorporated	Mission, commitment and objective document available	Hospital Management, Clinical Heads
Development of Organizational Structures and Process			
Team Development			
Identification of QA Team Leader (QA Officer)	Interviewing and assessing the aptitude and motivation	Team Leader identified and committed	Hospital Manager, Clinical Heads
Identification of QA Team Members		QA Team Members identified & committed	Team Leader, Clinical Heads
Training			
Training of QA Team Leader and Team Members in Quality Assurance programme development, implementation and assessment of effectiveness	Training Workshop	Team Leader and Members trained in Quality Assurance	Hospital Manager, Team Leader, Training Institute
Development of Patient Care Guidelines and Standards (Quality Manual)			
Identify priority areas of external and internal customers Develop Guidelines for patient care and Criteria / Standards for measurement	Customer expectation surveysl. Literature review, Professionals consensus development (Standard committee Procedures, Brainstorming, Nominal Grop Technique, Delphi)	A Quality Manual developed (including guidelines, criteria and standards for identified activities)	Team Leader Clinical Heads Nursing Staff
Development of Unit QA Teams			
Identification of Unit QA Team Leader and Members	Interviewing and assessing the aptitude and motivation	Unit QA Team Leader and Members identified	QA Team Leader and Team Members
Training of Unit Teams on the Quality Manual	Training Workshop	Unit QA Team Leader and Members trained	QA Team Leader and Team Members
Assessment of Hospital System Components and Development of QA Plan			
Perform Situational Analysis and identify situations where improvements can be made	Observation Survey Data Form survey	Assessment Document available	QA Team
Develop Quality Improvement Plan to reinforce existing quality practice and prescribe / recommend new practice	(Standard committee Procedures, Peer Reviews, Brainstorming, Normal Group Technique, Delphi)	QA Plan available	
Taking Action-Implementation of Quality Improvement Plan			
Provision of Material Support			
Provision of Written Guidelines to all concerned Provision of recording tools and instruments		Guidelines, communicated and understood. Recording tools and instruments made available and concerned personnel	Hospital Manager, Team Leader

Activity	Method	Output	Responsibility
Development of Mission and Strategy			
Patient / Client Care			
Patient / Client Care according to guidelines in all identified units	Case management methods	skilled in their use Care provided according to guidelines	Clinicians, Nursing staff, Auxiliaries
Supervision, Monitoring and Verification of Actions			
Reviewing measures made, to determine the actual improvement in the quality against goals or expectations	Unit Team Meetings	Regular meetings of Unit Teams held	
Determining why improvements did not occur as expected	Supervisory visits to units conducted	Regula supervisory visits & Members of	Unit Team Leader
Reviewing the use of the tools and framework, to find how well they are being applied and how their use may be improved.	Scrutiny of the records	Record data processed, analyksed	QA Team
	(use appropriate tools to discuss the problems, development of solutions, implementation, evaluation and sharing of lessons learned with other unit Teams in meetings of the Hospital QA Team)	(problems identified, solutins developed, implemented and evaluated)	
Holding a general project review of the success of the overall project to determine "best practices" and other learning points.		Outcome Evaluation report available along with recommendation for sustainability and application of the programme elsewhere	
Sustaining the Gains and Follow up			
Standardizing the solution, writing it up as a normal operating procedure and spreading it to other areas.	Writing up the project as a success story.	List of standardized solutions and 'best practices' available for including in Quality Manual	QA Team Hospital Maanagement
Addressing the cause of the lack of success, to prevent it recurring.			
Identifying additional improvement that may be made in the future			
Sharing the results with others			
Repeating the **"best practices"** and other lessons			
e.g. sustaining the improvement in the 'Processes' of care, reduction in post operative infections, optimization of 'length of stay' and improvement in 'Patient Satisfaction' etc.			

Tools And Techniques Applicable in Quality Assurance[3,8]

Standard Committee Procedures

Usual committee procedures are adopted for consensus development e.g. development of guidelines

Brainstorming

To develop creative ideas and to identify possible solutions to problems and potential opportunities for quality improvement.

Affinity diagram

To organize into groupings a large number of ideas, opinions or concerns about a particulartopic. Used to organize the ideas generated by brain storming.

Delphi

To collect, aggregate and refine judgments made by distantly placed experts on specified problems or topics. This technique avoids the confounding influences of face-to-face groups.

Surveys / Data Collection from

To gather data systematically to obtain a clear picture of the facts. Useful in situational analysis and assessment of consumer expectations and satisfaction.

Nominal Group Technique

A structured technique for decision making in a face-to-face group. Useful in development of new ideas, priority setting, and consensus development on identified solutions.

Bench marking

To compare a process against those of recognized leaders to identify opportunities for quality improvement.

Cause-and-effect diagram

To analyse and communicate cause-and-effect relationships. To facilitate problem solving from symptom to cause to solution e.g. high rate of nosocomial infection, above normal 'length of stay' for specific admissions.

Flowchart

To describe an existing process or to design a new process e.g. preparation of Quality Manual.

Tree diagram

To show the relationships between a topic and its component elements e.g. request for laboratory test.

Control chart

To evaluate process stability, to determine when a process needs to be adjusted and when it needs to be left as is and to confirm an improvement to a process.

Histogram

To display the pattern of variation of data, to communicate visually information about process behaviour and to make decisions about where to focus improvement efforts.

Pareto diagram

To display, in order of importance, the contribution of each item to the total effect and to rank improvement opportunities.

Scatter diagram

To discover and confirm relationship between two associated sets of data and to confirm anticipated relationships between two associated sets of data

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SUSTAINABILITY ANALYSIS WITH PRIMARY HEALTH CARE MANAGEMENT ADVANCEMENT PROGRAM MODULES - EXPERIENCE OF AN NGO IN PAKISTAN

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Summary

Sustainability is a relatively new, but major, concern of most development projects. This article describes the experience of using three PHC MAP (Primary Health Care Management Advancement Program) modules for analyzing the sustainability of an NGO-run rural health care project in Pakistan. The authors found the tool, which included checklists for ten sustainability factors, to be useful, particularly for assessing service quality and resource management issues. However there were limitations too - mainly a lack of emphasis on resource allocation, its limited capability to assess changing situations and inadequate option appraisal. It is also time-consuming and dependent on a high level of user skills. Finally, questions to be considered by potential users of PHC MAP are proposed[1].

Background / Introduction

The **PHC MAP** is a package of nine adaptable modules, developed by the Aga Khan Health Network in collaboration with Primary Health Care Operations Research (PRICOR). Each module explains how to collect, process and interpret PHC-specific information that managers can use to improve planning and monitoring. The PHC MAP package comprises modules on: information needs, community needs, work planning, surveillance, monitoring, service quality, management quality, cost analysis and sustainability analysis. (PHC MAP Module. 1, 1993).

APPNA SEHAT is an NGO devoted to improving health conditions in Pakistan through the implementation of practical, low-cost rural health projects. The organization has been working in villages in Pakistan for last five years and is expected to expand its activities, both in size and scope, in the near future[2].

Sustainability may be considered as the capacity of the health system to function effectively over time:

(i) without external help[3] (the ideal), or

(ii) with a minimum external input[4] (a moderate goal), or

(iii) with anticipated inputs[5] (the definition used for this analysis).

The PHC MAP Modules were used to analyze the sustainability of APPNA SEHAT projects in Pakistan. The purpose of the analysis was to find strategies that will produce an acceptable level of services at a cost the program can afford. The process included: i) assessing the threats to sustainability and dealing with these threats, ii) taking advantage of opportunities, and iii) subsequently incorporating these strategies into the next four year plans[6].

The main reason for selecting PHC MAP for the analysis was the familiarity of one of the authors with the modules-he participated in the

"Master Trainers' Training Workshop", at the ASEAN Institute, Thailand.

In the light of this limited experience of using three (of the total of nine) PHC MAP modules, the following questions are considered:

- what does it do or not do?
- skill and time required-is it user-friendly?
- waht are the other options for analyzing sustainability?

1. What Does It Do Or Not Do?

The module has a well defined list of ten political and managerial factors (i.e. a) target population size, composition and distribution, b) target group KAP, c) PHC service quality, d) management support, e) organisational capacity, f) political commitment, g) personnel resources, h) programme revenues, i) programme expenditures, and j) environment) influencing sustainability. However there is an un-equal emphasis on investment and resource management aspects, together with a limited capability to assess changing situations and inadequate option appraisal; these three points, which need to be kept in mind while using the module, are discussed below.

The PHC MAP modules include simple and practical work sheets for; designing an evaluation study, and listing sustainability factors and key indicators to assess each of these factors, as well as checklists for collecting data on the ten sustainability factors. All of these were found useful. Although it was not possible to come up with a list of sustainability factors equally relevant for all situations, the given list was found to be sufficiently comprehensive to meet our requirements.

However the information gathered about the ten sustainability factors was inadequate to answer satisfactorily two questions[1] of practical significance:

* Which and how many of these ten factors must be fulfilled before the long-term sustainability of a project is assured?
* How strong an influence must certain factors have in order to paralyse others? More generally, how do the various factors act on each other? Can certain factors replace others?

Secondly, according to Save the Children Fund UK[1], sustainability implies that resources are allocated appropriately, and are managed efficiently-in other words, that the "**right thing** is being **done rightly**". Therefore, ideally any analysis of sustainability should assess the process and effectiveness of both **allocating** and **managing resources** in the health system.

The PHC MAP focuses on resource management with little emphasis on resource allocation. As a result, it is a less than ideal tool for analysing sustainability, because efficient management of resources alone can not guarantee a sustainable project unless investment decisions are correctly made.

Thirdly, most of the sustainability analysis module, including the computer worksheets, makes the assumption of **no change** in the size or scope of the program. So it was difficult to apply to a situation where expansion, both in size and scope, of program activities is planned for the period under review. No clear guidelines are included to forecast the influence of planned changes on the sustainability of the project.

Due to the module's inability to deal satisfactorily with a changing situation, we had to exclude "financial assessment of sustainability" from the analysis of APPNA SEHAT projects.

Finally, the **option appraisal** (for selecting the 'optimum strategy') is limited to the financial implications, and other important aspects such as organizational and political feasibility are not considered. This creates difficulties, especially in a changing situation.

2. Skills and Time Required: is it User-friendly?

The sustainability analysis module provides adequate guidance to facilitate collection of data / information and suggests that threats and opportunities are considered. However there are no satisfactory guidelines on how to interpret the threats and opportunities and then transform the information into an appropriate strategy and action plan. As a result, the analysis is highly dependent on the judgement of a team of qualified and experienced health professionals.

It took three months, together with five colleagues involved in gathering and interpreting information, for the authors to complete the sustainability analysis. Due to this time-consuming process only four PHC and four management

support services could be assessed out of all the PHC and the management services.

The availability of computers and computerized information systems, such as financial accounts, survey records, monthly statistics etc. is desirable to facilitate the analysis process and to improve the quality of the product.

3. What are the other Options for Analyzing Sustainability:

There appears to be no directly comparable tool for sustainability analysis, although there is an overlap between sustainability analysis and the planning process, such as described in Green A.[9] and WHO[10]. The latter deal with situation analysis, priority setting, and the identification of strategies for change. PHC MAP is less suitable for allocative decisions, on the other hand, it gives greater guidance for assessing the quality of services and resource management issues.

Strengthening Health Management in Districts and Provinces[11] may be considered as another approach to resolving problems which threaten the sustainability of services. It seems to focus more on solving the **'immediately apparent problems'** faced by managers. Priority problems are taken, one at a time, for remedial action. However, it may not allow managers to focus on areas which are not very visible but still important for sustainability. Furthermore, it is designed for a workshop context and the decision-making process is dependent (at least initially) on the quality of the facilitators' input.

Conclusion: Issues For Potential Users

In the light of the above experience, the authors would like to suggest the following precautionary points for potential users of the PHC MAP Sustainability Analysis module:

1. Conducting analysis does not mean that the organization and its activites have become sustainable-this will involve on-going follow-up efforts.
2. Organizations must clarify the need for and the purpose of any such analysis is sustainability analysis the priority issue in the situation?
3. Organizations need to carefully assess the resource implications of conducting the analysis-is the opportunity cost of the whole process acceptable?
4. Does the organization need to assess the investment as well as the resource management aspects of sustainability? -if so, PHC MAP should be modified or supplemented by another tool.
5. Is the organization planning expansion in next few years? -have they considered the limitations of the tool and the projections which could be made?

PHC MAP is a useful tool that can be used to develop strategies for sustainability, but it does have certain limitations which need be kept in mind while using the sustainability analysis module. Besides, a successful sustainability analysis does not guarantee a sustainable project.

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TREATING BY SLEEPING
EFFECT OF SLEEP IN PARKINSON'S DISEASE (Sleep Benefit)
A STUDY OF SLEEP BENEFIT IN 50 PARKINSON'S PATIENTS

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Summary

We have examined 50 Parkinsonian patients and assessed them for the presence or absence of sleep benefit. 40% of patients experienced sleep benefits. Compared with patients who do not have sleep benefits, patients with sleep benefit tended to be younger at disease onset, have longer disease duration, take higher total daily dose of levodopa and have longer duration of levedopa treatment. Clinicians should consider the existence of this phenomenon when prescribing or adjusting patients medication schedule.

Introduction

Sleep benefit is a frequently observed phenomenon in patients with Parkinson's disease (P.D.) It is defined as a period of lessened disability upon awakening from sleep[1]. However it has received very little attention in the literature and treating physicians do not recognize its importance. Marsden et al[2] and Parkes[3] estimated that 10 to 20% of patients with mild to moderate. Parkinson's disease experience lessened disability for 40 to 60 minutes after waking than late in the day. The purpose of our study was to document the beneficial effect of sleep on the activity of Parkinsonian patients so the data may be used by the physicians and neurologist while treating the Parkinson's disease.

Material and Method

Fifty patients seen in neurology outdoor, Nishtar Hospital, Multan from October 1996 to November 1997 and diagnosed with Parkinson's disease were interviewed regarding disease onset and medication history, as well as current symptomatology such as presence of dyskinesia and fluctuations. Emphasis was placed on obtaining the subjective opinion of patients for the effect of sleep on their activities. Positive sleep benefit (SB+) was ascertained by each patient's subjective experience of feeling "on" upon awakening from sleep and not in need of the morning medication to initiate activities. In contrast, assignment of patients to the negative sleep benefit (SB-) group was based on their subjective experience of feeling "off" upon awakening and requiring medicaion to begin their activities.

Results

Twenty patients, 40% of the total samples reported the occurance of sleep benefit where as 30 (60%) patients reported that they did not experience sleep benefit. Table 1

Table 1: *Clinical features of Parkinson's patients with and without sleep benefit.*

	SB+ group (n=20)	SB- group (n=30)
Age at the onset (yrs.)	55.3 ± 10.2	58.7 ± 10.8
Disease duration (yrs.)	10.2 ± 5.3	8.6 ± 5.5
Levodopa duration (yrs.)	7.2 ± 4.8	4 ± 4.6
Average daily levodopa dose (mg)	780 ± 717	558 ± 381

shows the means, standard deviations and result of group comparison between SB+ and SB- patients. There were significant differences between the groups with respect to age at onset of symptoms, disease duration, levodopa treatment duration and average total daily levodopa dosage. Specifically SB+ patients were younger at time of onset of the symptoms, (SB+; 55.3 ± 10.2 yrs.; SB-; 58.7 ± 10.8 yrs.), and their mean duration of disease (10.2 years) was longer than the SB- patient's mean duration of disease which was 8.6 years. In addition the SB+ patient's duration of treatment with levodopa (7.2 ± 4.8 yrs.) was almost twice as long as that of SB- patients (4.0 ± 4.6), and the SB+ group's total daily levodopa dose of 780mg was significantly higher than SB- group's daily levodopa dose of 558mg.

Discussion

In our study, 40% of the Parkinsonian patients interviewed and examined, reported sleep benefits upon awakening in the morning. The mean duration of lessenced disability was one hour. These patients delayed their morning dose after awakening and they also did not require levodopa to initiate their movement. This physiological effect of sleep on the activity of Parkinsonian patients is important because by sleeping more, the patients can increase their activities, decrease the dose of levodopa and so avoid the side effects of that drug.

The sleep benefit is more in those Parkinsonian patients who have following characterstics.

1. They are younger.
2. They have long duration of levodopa therapy.
3. They have long duration of treatment.
4. They have higher total daily levodopa dosages.

In a recent report by Currie et al[1], in which 163 patients of Parkinson's disease were examined 33% patients clearly showed sleep benefit. In an other recent preliminary report of 117 patients 25% of the subjects reported sleep benefit lasting 30 minutes to greater than 3 hours[4]. Patients in that study with sleep benefits were younger, had shorter disease duration, and took less levodopa per day. The authors concluded that sleep benefit was associated with mild Parkinson's disease and may reflect the effect of sleep on residual dopamine storage of dopamine receptors.

The findings of this study suggested that sleep benefit is a common phenomenon that might be anticipated in a subgroup of patients with Parkinson's disease. The mechanism underlying sleep benefit do not appear to be simple and may be multifacterial. Marden[2] and Parkes[3] have speculated that sleep benefit occurs as a consequence of replenishment of presynaptic dopamine stores.

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