

PAKISTAN JOURNAL OF HEALTH

Official Journal of College of Community Medicine, Lahore



5/17

PAKISTAN JOURNAL OF HEALTH

EDITORIAL COMMITTEE

Chief Editor

Mahmuda Mubasher

Editor

I. A. Naveed

Managing Editor

Musarrat Nisar Ahmad

Assistant Editors

Maqsood Ahmad

Shaheena Manzoor

EDITORIAL BOARD

A. H. Awan	..	..	..	(Lahore)
Muhammad Ilyas	..	..	..	(Karachi)
Syed Mohsin Ali	..	..	..	(Islamabad)
Iftikhar A. Malik	..	..	..	(Rawalpindi)
Akhtar Ali Qureshi	..	..	..	(Rawalpindi)
Muhammad Zahir Shah	..	..	..	(Peshawar)
Siraj-ul-Haq Mehmood	..	..	..	(Islamabad)
Geofferey Carroll	..	..	..	(London)
Shamim Manzoor	..	..	..	(Lahore)
M. A. Barzgar	..	..	..	(WHO-Islamabad)
Muhammad Akram Pervaz	..	..	..	(Lahore)
Naeem-uddin Mian	..	..	..	(Lahore)

Correspondence:

Editor, Pakistan Journal of Health, College of Community Medicine

6 - Birdwood Road, Off Jail Road, Lahore

CONTENTS

EDITORIAL

- Population Explosion** 1
Rukhsana Majeed, I. A. Naveed

ARTICLES

- Relation of Cholesterol and Triglycerides** 3
Levels in Smokers and Obese Individuals with Ischaemic Heart Disease
M. Sarwar Bhatti, Riaz Javed Raja, M. Shakoor
- Assessment of Knowledge and Practices of Medical Staff regarding Nosocomial** 7
Infection and Its Prevention at the Punjab Institute of Cardiology, Lahore
Akhtar Ali, Gohar Wajid, Maqsood Ahmad and Zubair Ahmed
- The Use of Community Settings for** 13
Education __ Student's Perceptions after Five Years of Training
Muhammad Iliyas
- Health Effects of Ethylenediamine** 17
Mubashir A. Malik
- Role of Traditional Birth** 23
Attendants in Reducing Maternal & Infant Mortality
Mahmuda Mubasher and Abdul Jamil Chaudhry
- Assessment of Vacancy Rate and Utilization of** 27
Residential Facilities at Basic Health Units of Distt. Gujrat
Shaheena Manzoor
- A Comparative Study of Utilization of** 31
Physician and Non-physician Health Services by a Rural Community
Maqsood Ahmad, Saeeda Rashid, Shaheena Ayaz And Rashid Masood Khan
- Hydatid Disease - Some Unusual Sites** 35
I.A. Naveed, R.J. Raja & C.M. Saleem
- A Study of Non A Non B Hepatitis with Specific Reference to Hepatitis E** 37
Rizwan Ullah Khan

EDITORIAL

POPULATION EXPLOSION

Accelerated population growth is a global problem. Both developed as well as developing countries are being affected by rapid population growth in various ways. Although developed countries have achieved replacement level fertility rate i.e., 2.1 children per woman, the standard of living is so high that with one fourth of total world population in developed countries, they require more resources than the developing countries, to support their population (1). The problem of population growth in the developing countries is different, where the resources are already meagre to support the growing population with adverse effects on the employment and natural resources. (2).

So population growth is a global problem which requires a global response to overcome it, however greater share of responsibility lies with the developing countries including Pakistan as three fourth of the population resides in these countries where the numbers have been allowed to multiply at runaway rates with bland unconcern (3).

It is an irony of fate that Pakistan has been surrounded by different internal and external problems since the time of her creation. The government hardly overcomes one problem when another emerges to threaten the country.

Pakistan is strategically located and is constantly under military threat from neighbouring countries. The internal problems are provincialism, ethnicism, sectarianism, social evils like drug mafia, political anarchy, rising inflation rate, health problems and the list is increasing day by day. These problems are recognized by the government as well as by the citizens and each government gives some consideration to them, but the biggest and real threatening problem deserving most serious consideration is that of unabated population growth, which has brought the country to the stage of population explosion.

In Pakistan, the experts recognized the problem of accelerating population growth immediately after it came into being. In the light of percent decennial rate of population growth which was 0.47 % during the decade 1891 - 1901 and 1.55 % during the period that fell between 1931 - 1941, the experts speculated that a rate higher than 1.4 % would seriously affect the prospects of development in future (4). In response to this speculation, the Family Planning Association was established in 1953 which was a government supported voluntary agency. Unfortunately due to lack of political stability and ever changing national priorities, the set targets were never achieved and the population kept mushrooming, which has now reached the figure 123 million with growth rate 3.2 % a horrible figure for a developing country.(5).

Why have we not been able to lower our population growth rate so far ? Among the many social, cultural and traditional causes for the accelerating population growth, the most

important reason had been the lack of political commitment and the priorities. Every ruling party in Pakistan gave priority to those problems, the solution of which could bring immediate dividend before the public thus proving its efficiency and strengthening its political position. The problem of population control is different, where it is not possible to reduce the growth rate to the desired level within 2 - 3 years. The control measures are time consuming and will bring positive results after 20 - 25 years, which means if any government starts any population control programme today, the credit of positive results achieved after 20 - 25 years will go to the ruling party present at that time and no government in Pakistan wants to carry out any policy, the credit of which goes to the next ruling party - what a pity!

If we want to preserve our resources, make our country prosperous and strong, give a good and happy future to our children, we will have to stop the flood of population by launching an extensive population planning programme with full political commitment.

RUKHSANA MAJEED

I. A. NAVEED

College of Community Medicine, Lahore.

References:

1. Population Reports, Series M, No: 10, Baltimore, Johns Hopkins University, Population Information Programme, May, 1992.
2. Hashmi, S.S., Population Welfare Programme, Growth of Population and Social and Economic Development in Pakistan, Islamabad : National Institute of Population Studies, 1991.
3. World Health Statistics, 1987.
4. National Management Paper on problems of Population Growth in Pakistan. 57th National Management Course, Lahore : Pakistan Administrative Staff College, 1992.
5. Economic Survey of Pakistan, 1992.

RELATION OF CHOLESTEROL AND TRIGLYCERIDES LEVELS IN SMOKERS AND OBESE INDIVIDUALS WITH ISCHAEMIC HEART DISEASE

M. SARWAR BHATTI, RIAZ JAVED RAJA, M. SHAKOOR
Department of Pathology, King Edward Medical College, Lahore

Summary

Plasma cholesterol and triglycerides levels were measured in healthy non obese smokers, non smoker obese and non obese, non smokers control subjects independent of sex and age. Significantly higher levels of cholesterol ($p < 0.05$) and triglycerides ($p < 0.05$) were found in obese subjects. Similarly higher levels of cholesterol ($p < 0.05$) and triglycerides ($p < 0.05$) were seen in smokers. Our results showed strong positive correlation of obesity and smoking with levels of cholesterol and triglycerides. It has already been suggested that increased cholesterol and triglycerides levels, observed in cigarette smokers and obese individuals, are associated with higher incidence of coronary heart disease.

Introduction

Myocardial infarction is one of the most common causes of death in developed countries and large section of the population even in under developed countries are falling prey to it. Ischaemic heart disease has become a public health problem, and preliminary work on risk factors for IHD, has already shown that diabetes mellitus, hypertension, excessive smoking, obesity and hyperlipidaemias are major risk factors. The relation between atherosclerosis and serum cholesterol, triglycerides concentration is well established. It is well known that CHD is greater in obese persons (1) and is associated with elevated blood lipids. We already know that the incidence of CHD increases in smokers and the effect can be seen even at low levels of cigarette consumption (2).

Material and Methods

The study was carried on fifty healthy smokers non-obese, non smokers obese and thirty non smokers, non-obese control subjects. The criteria for smokers was those who smoke more than 10 cigarettes / day for the last more than 10 years. For obese we followed Quetelet's (3) Body Mass Index and included subjects with BMI of Grade II and

Grade III. We also measured height and weight for calculating BMI.

Samples of blood were withdrawn from subjects after 14 hours of night fasting, sera were refrigerated and investigations were carried out within three days after sample collection. For cholesterol estimation method based on cholesterol oxidase technique (Human, Germany) was used. Triglycerides analysis was done by triglyceride oxidase method (Human, Germany).

Results

In this study, fifty healthy volunteers from different socio-economic back-ground were included.

They were divided in two groups.

- (a) Obese Non smokers
- (b) Smokers Non Obese

Control studied were done on normal healthy, non obese, non smokers. Tests were done in batches. Results are presented in the form of tables and histograms. The results of triglycerides concentrations in all the groups as well as control are presented in table No.1 showing the mean

Relation of Cholesterol & Triglycerides Levels with IID
values and standard deviation of all the samples.

Table 1: Triglycerides

	Control	Obese	Smokers
MEAN	151	238	204
S. D.	28.86	34.80	29.2
		$P < .001$	$P < .001$

S. D. = Standard Deviation
Normal Values = upto 160 mg/dl (Fasting)

The effects is further elaborated histographically, which shows an increase in triglycerides levels ($p < 0.001$) in obese and smokers as compared to control subjects. While comparison between group A & B shows slightly higher level in group-A as compared to group B. ($p < 0.01$).

Similarly the serum total cholesterol levels in all the volunteers i.e., group A and B and control

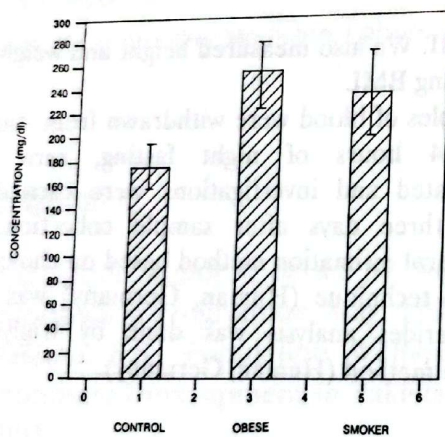
samples were analysed and the results are shown in table 2 with mean values and standard deviation. Group 2 indicates significant increase in total cholesterol levels in Group A and Group B ($p < 0.001$) as compared to control. comparison of results between two groups (Obese and smokers) shows slightly higher values in Group A as compared to Group B. ($p < 0.01$). These results are further elaborated histographically.

Table 2: Cholesterol

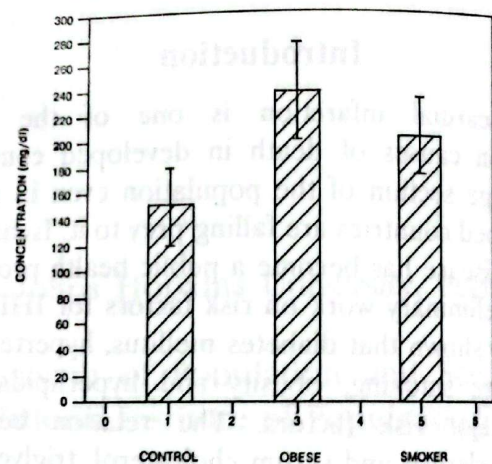
	Control	Obese	Smokers
MEAN	176	251	234
S. D.	16.10	26.20	33.35
		$P < .001$	$P < .001$

S. D. = Standard Deviation
Normal Values = 150 - 250 mg/dl

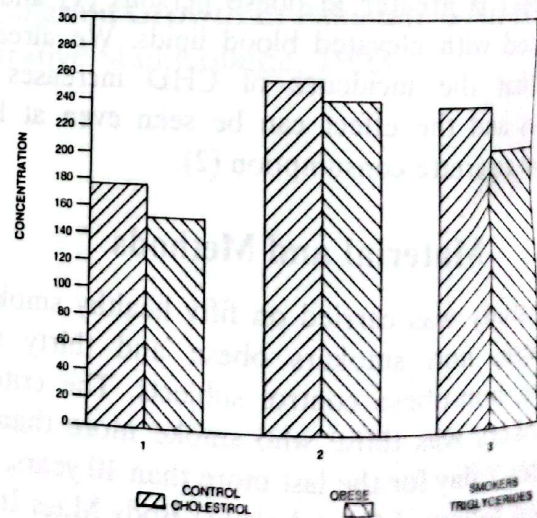
HISTOGRAM OF CHOLESTEROL



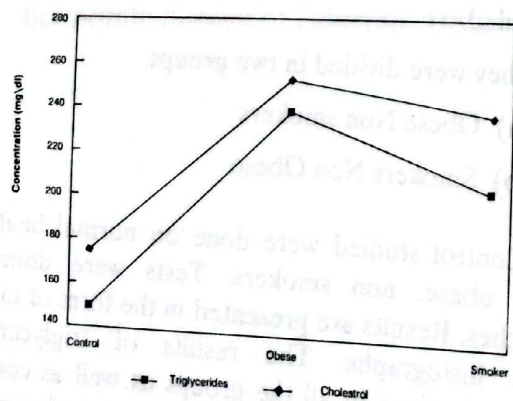
HISTOGRAM OF TRIGLYCERIDES



COMPARISON OF MEAN VALUES OF TRIGLYCERIDES AND CHOLESTEROL



COMPARISONS OF MEAN VALUES OF TRIGLYCERIDES & CHOLESTEROL



Discussion

The importance of development of Ischaemic Heart Disease with reference to hyperlipidaemias is well established. The association of serum lipids levels and the risk of CHD has been demonstrated repeatedly (4,5). The incidence of cardiovascular disease and mortality is accentuated in the massively obese individuals (6). Similarly the incidence of CHD is high in smokers (2).

In the present study the effects of obesity and smoking are observed on triglycerides and total cholesterol levels. The results of triglycerides are presented in table No. 1, and Fig. 1, where triglycerides levels in control subject is 151 ± 28.86 mg/dl. as compared to the significantly higher levels of triglycerides in obese subjects 238 ± 34.8 mg/dl. and in smokers 204 ± 29.2 mg/dl. It would be important to emphasize that triglycerides molecules are the major forms of lipids storage component. Although in recent studies it is overwhelmingly suggested that triglycerides levels are the most important factor leading toward CHD (7), however in the past also triglycerides as a risk factor has been suggested by various workers (8,9). In these studies it has been shown that almost 90 % of patients with symptomatic atherosclerosis were hypertriglyceridemic.

Roseman (10) and Carlson (11) described that high levels of triglycerides contribute towards CHD. These workers have suggested that hypertriglyceridemias are independent risk factor for development of CHD. This finding is also supported by the studies of Howard et al (12). Where they have found a strong positive correlation of triglycerides with obesity in PIMA Indians.

Increased cholesterol levels and coronary heart disease were observed in cigarette smokers and obese people by various workers (13, 14, 15, 16). In our study, cholesterol levels are higher in smokers 234 ± 33.35 mg/dl. and obese 251 mg/dl. ± 26.20 s, as compared to control subjects 176 mg/dl. ± 16.10 in table II, and histogram II. The Framingham study (14) confirmed that weight gain is associated with higher cholesterol levels. In further support to the findings of higher cholesterol levels in smokers, Gorden (17), suggested that cholesterol concentration was higher in men who has most recently given up smoking.

Goldbourt (18), suggested in his study that higher levels of cholesterol are associated with CHD. but levels below 220 mg/dl. have no association with increased incidence of mortality from CHD.

Our study also supports the observations of the previous workers and therefore, it may be suggested that obese and smokers are definitely at a higher risk for CHD.

References

1. Rabkin, S.W and Mathewson, F.A. (1977). Relationship of body weight to development of Ischaemic Heart Diseases in a cohort of young. North American men. Manitoba study. A.J, Cardiol, 39:452.
2. Kannel, W.B., Castelli, W.B. and McNamara, P: (1967). Coronary profile: Framingham study. J. Occu. Med. No: 12, 611.
3. Quetelet, L.A. (1869). Physique Sociale, Brussels: Murquardt.
4. Kays, A: (1980). Seven Countries Study. Harvard University, Press.
5. Stamler, J., Wentworth, D: (1986). Is the relationship between serum cholesterol and risk of premature death from coronary heart disease continues and graded. JAMA. 256: 2823 - 2828.
6. Sorenson, T. and Sonne Holm, S.M. (1977). Mortality in extremely young over weight men. J. Chronic Dis. 30: 359 - 67.
7. Varley, H., Gowenlock, H.A. and Bell, M: (Editors) 1984. Practical clinical biochemistry. Vol. 1, 5th, William Heinemann Medical Books Ltd. London. P. 677.
8. Albrink, M.H. MAN, E. B: (1959). Serum triglycerides in coronary artery disease. Arch. Intern. Med. 103:4.
9. Brown, D.F., Doyle, J.T. Serum triglycerides in health and in Ischaemic Heart Disease. N. Engl. J. Med. 273 : 947.
10. Roseman, R.H. and Friedman, M. (1970). Coronary heart disease in the Western Collaborative Group Study. J. chronic Dis. 23 : 173.
11. Carlson, L.A., Bottiger, L.E. : (1972). Ischaemic heart disease in relation to fasting values of plasma triglycerides and cholesterol. Stockholm Prospective Study. Lancet, 865.
12. Howard B.V., Davis M.P. (1983). Plasma and Lipoprotein cholesterol and triglycerides concentrations in the PIMA Indians. Circulation 6: 714 - 724.
13. Dawber, T.R. Kannel, W.B. and Gorden T: (1959). some factors associated with the development of

- coronary heart disease. Am. J. Pub. Health: 49 : 1349 - 56.
14. Friedman, G.D. and Dale, L.G. (1979). Mortality in Middle aged smokers and non smokers. N. Engl. J. Med. 300: 213.
 15. Friedman, C.L. and Falko, J.M. (1982). Serum Lipoprotein responses during active and stable weight reduction in reproductive obese females. J. Clin. Endocrinal Metab. 55: 258 - 262.
 16. Framingham Study (1980). Paul Sorlie & Tavia Gorden Body buky build and mortality. JAMA, May, 9, Vol. 243.
 17. Gorden T, Castelli, W.P. Kannel W.B. (1977). High density lipoproteins as a protective factor against coronary heart disease. Am. Jr. of Med. 62: 707.
 18. Goldbourt U, Holtman E: (1985). Total and high density lipoprotein cholesterol in the serum and risk of mortality. BMJ; Vol. 290: 1239-1242.

ASSESSMENT OF KNOWLEDGE AND PRACTICES OF MEDICAL STAFF REGARDING NOSOCOMIAL INFECTION AND ITS PREVENTION AT THE PUNJAB INSTITUTE OF CARDIOLOGY, LAHORE

AKHTAR ALI, GOHAR WAJID, MAQSOOD AHMAD AND ZUBAIR AHMED

*Govt. Mental Hospital, Shaikh Zayed Hospital
and College of Community Medicine, Lahore.*

Summary

A cross-sectional concurrent study regarding nosocomial infections was conducted with a view to assess knowledge and practices of the medical and nursing staff in the Punjab Institute of Cardiology, Lahore. Rationale was to suggest some improvements so that nosocomial infection could be controlled, thereby improving quality of patients care, to decrease morbidity and mortality, to cut short patients stay and expenses. Knowledge of physicians regarding understanding of hospital acquired infection, documenting procedures and self check-up is found to be inadequate and the condition is even worse for nurses. There is an Infection Control Committee but its organization and composition is unsatisfactory. There are no explicit policy guidelines for control of nosocomial infection. The three priority areas identified are improvement in the working of Infection Control Committee, continuing education programme and check-up of the high risk group for different carrier states.

Introduction

Ages ago, Hippocrates exhorted followers, "first do no harm". nowhere does this charge seem more relevant today than in hospitals. A large number of people work in hospitals and may become infected through exposure to infected patients and through other sources of infection. In either case they may transmit infection to patients, other hospital personnel, members of their household, or other community contacts. The high risk group includes nurses, medical house staff, clinical faculty members, attending physicians, paramedical personnel and medical students.

There is a growing concern among opinion leaders and public at large about unsatisfactory standards of patients care in hospitals. There are a number of reasons for such a situation, and one of them is nosocomial infection. Hospital acquired or nosocomial infection constitutes major medical problems of today. It may be defined as clinical infection occurring in patients as a result of hospitalization and that was not present or incubating in at the time the patient was

admitted^[1]. The infection can be acquired because of diagnostic or therapeutic procedures or from exposure to the hospital environment or contact with its staff. Patients who had nosocomial infection had to stay in hospitals for an average of 10 to 17 days longer than others and 3.8 times higher mortality has been reported in patients having nosocomial infection than other^[2].

The financial cost of nosocomial infection is also staggering. Whenever such an infection occurs, the hospital stay is extended and health care cost increases. The Centre for Disease Control U.S.A. estimated that up to 6 billion dollars additional hospital cost are incurred annually as a direct result of nosocomial infection. It has also been estimated that at least 2 billion dollars could be saved each year by a significant reduction in the incidence of these often preventable infections^[3].

Nosocomial infection reflects a dynamic interaction between host, agent and environment. In the compromised host the microbes most frequently associated with nosocomial infection in the Intensive Care Units normally reside in or on the body surface or in the environment. The host is exposed to a variety of diagnostic and therapeutic

intervention that disrupt normal physical and chemical barriers, and allows direct bacterial access to the internal milieu of the host^[4].

Most common nosocomial infections are respiratory tract infections, urinary tract infections, bacteremia, wound and local thrombophlebitis^[5]. The most frequent etiological agents reported are *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Streptococcus* and *E. Coli*^[6].

Nosocomial Infection Control Program seems to be new one in our country but in the western world, the work on such type of programs had started long ago. To keep the incidence of nosocomial infection in limits, it is important that hospital staff is well aware of the sources of infection, channels of transmission and techniques to keep the infection in limits. This study was carried out at the Punjab Institute of Cardiology, Lahore, which is a tertiary care specialized health facility, catering for all cardiovascular diseases including open heart surgery. Its catchment area consists of the province of Punjab.

The study was conducted with following objectives:

1. To assess the current status of knowledge and practices of nosocomial infection among the staff of the Punjab Institute of Cardiology.
2. To ascertain the relationship between the level of knowledge and practices for required care.
3. To identify various aspects which cause or could cause such infection.
4. To formulate realistic suggestions and recommendations for improving the knowledge and practicing it for prevention of nosocomial infection.

Materials & Methods

The study population consisted of all the doctors and nurses working in the institute, which was stratified into doctors (having a minimum qualification of M.B.B.S.) and nurses having a minimum qualification of diploma in nursing). Sixteen physicians were selected randomly from a total compliment of 60 physicians of all grades and 20 staff nurses were selected randomly from a total of 80.

The doctors and nurses were asked to fill a questionnaire to assess their knowledge regarding nosocomial infection and the practices adopted by

them with particular reference to measures taken to prevent hospital acquired infection while performing certain procedures. Two questionnaires were prepared for this purpose, one for doctors and the other for nurses. Questionnaires were pre-tested for any deficiencies in another institute, before being finalized. Medical and nursing staff were briefly explained the purpose of study. Questionnaire was distributed to the staff and collected on the same day or the day after if desired, the staff was assisted to fill the questionnaire appropriately. All questionnaires were checked for missed and incorrect entries on the same day. Confidentiality was maintained throughout the study.

Knowledge of nursing staff was assessed for the understanding of nosocomial infection, adopting aseptic measures before performing certain procedures, such as; intramuscular/intravenous injections, technique of oxygen inhalation, changing of bed sheets, reporting procedure about hospital acquired infection, self check-up for carrier state of communicable diseases and knowledge about maintaining good personal hygiene of patients.

Knowledge of physicians was assessed for understanding of nosocomial infection, adopting aseptic measures before performing certain procedures, such as; establishing central venous line, cardiac pace making, endotracheal intubation, urinary catheterization, self medical check-up for carries state, teaching of nursing/paramedical staff on prevention of hospital acquired infection and education of patients about personal hygiene. Knowledge of the two groups was categorized as adequate or inadequate on the basis of pre-defined criteria. The sample population was not only asked about their knowledge and practices about nosocomial infection but the doctors and nurses were observed to see if the procedures are actually performed by them as they claim.

Results

Table 1 gives the results of knowledge and practices of physicians about nosocomial infection. Only four out of 16 (25%) physicians had adequate knowledge of nosocomial infection and only six out of 16 (37.50%) could recognize nosocomial infection. Some of other weak areas included aseptic measures taken during endotracheal

intubation, voluntary reporting of hospital acquired infection, self check-up for carrier state and teaching nursing staff for prevention of nosocomial infection.

Table 1: Knowledge & Practices of Physicians regarding Nosocomial Infection & Its Prevention

	Response			
	Adequate No.	(%)	In-Adequate No.	(%)
Understanding of nosocomial infection	4	25.0	12	75.0
Recognition of nosocomial infection	6	37.5	10	62.5
Written orders given before performance of procedure	10	62.5	6	37.5
Documentation of procedure date, time and initials of performer	12	75.0	4	25.0
Aseptic measures taken while examining a number of patients	11	68.8	5	31.2
Aseptic measures adopted for insertion of C.U.P.	12	75.0	4	25.0
Aseptic measures for urinary catheterization	13	81.3	3	18.7
Aseptic measures for cardiac pace making	10	62.5	6	37.5
Aseptic measures during endotracheal intubation	5	31.3	11	68.7
Voluntary reporting of hospital acquired infection	7	43.8	9	56.3
Self check up for carrier state	4	25.0	12	75.0
Teaching nursing staff for prevention of nosocomial infection	6	37.5	10	62.5
Teaching patients about good personal hygiene	9	56.3	7	43.7

nurses interviewed had any understanding of hospital acquired infection and none of them had ever checked herself for carrier state. Only seven out of 13 (35%) checked the condition of I/V fluid before administration. Other weak areas included the use of appropriate techniques to change oxygen inhalation apparatus, voluntary reporting of hospital acquired infection and changing bed sheets.

Table 2: Knowledge & Practices of Nurses regarding Nosocomial Infection & Its Prevention

	Response			
	Adequate No.	(%)	In-Adequate No.	(%)
Understanding of nosocomial infection	Nil	Nil	20	100
Aseptic measures before performing a procedure	15	75	5	25
Changing of I/ V site	11	55	9	45
Recording date & time of I/ V line	12	60	8	40
Checking of condition of I/ V fluid before administration	7	35	13	55
Practice of changing bed sheets	19	95	1	5
Precautionary measures taken before oxygen inhalation.	13	65	7	35
Discarding water from oxygen humidifier	17	85	3	15
Changing oxygen inhalation tubing catheters, canulas	4	20	16	80
Voluntary reporting of hospital acquired infection	12	60	8	40
Self check up for carrier state	Nil	00	20	100
Ensuring good personal hygiene of patient	3	15	17	85
Teaching patient about good personal hygiene	12	60	8	40

Twenty staff nurses were surveyed regarding their knowledge and practices with a view to prevent hospital acquired infection. From the findings (Table 2) it transpires that none of the

Discussion

Majority of the physicians had inadequate or no knowledge in so far as understanding and

recognition of hospital acquired infection were concerned. The reasons for this poor show of knowledge about nosocomial infections on the part of physicians may be that the subject is not given due importance by the medical teaching staff. Secondly the subject is not considered of any worth by the medical students during their training in medical colleges and practical training in hospitals.

The practice of prevention of nosocomial infection springs forth from a positive attitude towards patients well being. It is understandable that under life threatening situations a physician may not have an opportunity before performing a therapeutic procedure to save the life of a person. However, it is unethical and sometimes dangerous not to explain a procedure. Several reports on medical ethics have explained the importance of informed consent in the field of medical ethics. Unfortunately during the course of this study in the overwhelming majority, no explanation what so ever was given to the patients while performing these procedures which were of non-urgent nature and reflects poorly on the attitude giving rise to an impression that the personnel are not sensitive to the feelings of patients under their charge. Of the 16 physicians interviewed regarding assessment of correct practices like documentation of procedures like insertion of CVP lines, urinary catheterization etc., between 63 to 81 percent responded that they did adopt proper aseptic measures like washing of hands, sterilization of sites, wearing of gloves. However from the observational study, it was found that only between 22 to 50 percent physicians took correct aseptic measures in the performance of different procedures.

This gulf of a difference between what the physicians have stated and what they actually do need to be explained, but the explanation is not an easy one. It is a complex matter and one has to avoid sweeping abatements which could introduce bias of a subjective nature.

Twenty staff nurses were surveyed regarding their knowledge and practices with a view to prevent hospital acquired infection. From the findings it transpires that none of the nurses interviewed had any understanding of hospital acquired infection. It is difficult to believe that these nurses during their training were not taught about aseptic measures, methods of sterilization and other measures for control of infection. Nevertheless this study amply makes it evident that

those who were interviewed had no knowledge or understanding of nosocomial infection. Continuing education programmes seem to be the need of the time.

It follows therefore that these nurses were either not taught the importance of hospital acquired infection during their training years or that they had at the time of interview forgotten what-ever knowledge they were imparted during their training. It is indeed preposterous to believe that these qualified nurses have now at this stage complete amnesia regarding knowledge of hospital acquired infection, if they were at all taught this subject during their training year. The most probable answer to this lack of knowledge about this subject appears to be that insufficient attention was given to this subject during the training years of these nurses.

While during interview 75 percent of nurses claimed that they took adequate aseptic measures like hand washing before performing a procedure or assisting in it. But on observation of the nurses during the performance of various procedures, majority of them never bothered even to adopt such simple aseptic measures like hand washing. This sort of unprofessional and callous attitude cannot be condoned and has to be seriously given attention. There are various ways to remedy this situation. One way to change this attitude or bad habit is health education of nurses. The other extreme is to impose strict discipline during the performance of various procedures.

From this study it is amply evident that voluntary reporting of hospital acquired infection is few and far between. This problem seems to be of universal nature. Bartlett and Chemioterapia reported that long term compliance of voluntary reporting by clinical staff has rarely been achieved but continuous and selective clinical surveillance has been implemented successfully in the U.S.A. Selective clinical surveillance, supplemented by laboratory data, may be a practical preposition in Europe, even with existing staffing levels and validation studies of the various methods are needed urgently [7].

Conclusion

Knowledge regarding nosocomial infection, documenting procedures and self check up is totally inadequate as regards the nursing staff. Knowledge

of medical staff, regarding understanding and prevention of nosocomial infection is inadequate as well. In the performance of various procedures due care is not given to aseptic techniques in the majority of procedures. There is hardly any explanation being given to patients who are about to undergo a procedure. cleansing methods are unsatisfactory. There are no proper disposal facilities for contaminated articles, linen and soiled dressings etc. Bed making is done daily and clean bed sheets are provided on regular basis. Hand washing facilities are provided but one hardly sees soap cakes provided for disinfecting hands. sterile equipment like cardiac pacing wires is not frequently provided. provision of face masks, sterile drapes is not provided in adequate amount.

Although there is an infection control committee at the institute but proper organization of the committee is essential. The working of the committee may include the follow up of general principles to control nosocomial infection such as: written procedures for controlling all infection hazards to patients, employees and visitors; a practical surveillance system to detect nosocomial

infections; epidemiological investigations when appropriate.

Effective continuing education programme, complete check-up of the health of the employees are two other most important factors to be considered.

References

1. Brawley RL, Weber DJ. Multiple Nosocomial Infections and incidence. *Am.J. Epidemiol.* 1988; 130 (40): 769-80.
2. *Ibid.*, 80
3. Reinartz JA. Clinical Symposia on Nosocomial Infections by CIBA. 30(6) : 1
4. Massanari RM. Nosocomial Infections in critical care units, causation and prevention. *Crit. Care-Nurs-Q.* 1989, 11(4): 45-57.
5. Daschner F, Frank U. Proven and Unproven methods in hospital infection control in intensive care units. *Chemioterapia*, 1987, 6(3): 184-189.
6. Ortona L, Federico G, Fontoni M. A study on the incidence of post-operative infections and surgical sepsis in a University Hospital. *Infect-control*. 1987, 8 (8) : 320-324.
7. Bartlett CL. Efficacy of different surveillance systems in detecting Hospital acquired infections. *Chemioterapia*. 1987, 6 (3) : 152-155.

THE USE OF COMMUNITY SETTINGS FOR EDUCATION — STUDENT'S PERCEPTIONS AFTER FIVE YEARS OF TRAINING

MUHAMMAD ILIYAS

Deptt. of Community Medicine, Baqai Medical College, Karachi

Summary

This paper presents significant perceptions of the students after an experience of five years of community oriented training at Baqai Medical College, a non-governmental institution in Karachi. These perceptions are: (a) Ability to determine the felt needs of the community which are also health-related. (b) Base line surveys indicated that a vast majority of the community is living below the poverty line, with inadequate housing, lack of water supply and basic necessities of life. (c) The essential health indices, the Maternal and Infant Mortality Rates present a dismal picture. (d) Existing health facilities in the area are inadequate. (e) Health care delivery is not confined to the boundaries of the hospital but extends far beyond these areas.

Introduction

Baqai Medical College is a non-governmental institution with a commitment of producing community oriented physicians in support of governmental efforts of strengthening the health services of Pakistan. With this object in view, the institution has set up an innovative model with a network of primary health care centres in the rural area with a population of 20,000. where students are involved in the program.

Presently the curriculum of medical education as laid down by the standards setting body, the Pakistan Medical and Dental council provides a five years training course with a distribution of 250 hours for community medicine including Behavioral Sciences, distributed as 50 hours in the first year, 50 hours during the 2nd year and 75 hours in each of the 3rd and 4th year. The Council also lays down that the very object of the medical education is the training of community oriented physicians.

Not only there is a deficiency in the implementation of these regulations but the curriculum itself needs a further revision for which a task force has been set up in partnership with the Pakistan Medical and Dental council, Aga Khan

University Medical College and Baqai Medical College.

The present paper focuses on obtaining the students perceptions from their five years experience in community oriented training programs through a questionnaire administered to 95 students, representing 27% from 350 students in all the classes (36 after completion of time period of five years and 59 who completed a part of the fifth year) and the responses were obtained through this. They are summarized in the subsequent paragraphs.

Reasons on the Choice of Medical Education:

In the initial stages, we felt that the technology we learn will bring applause, financial gain and social status and many of us were planning to join the clinical area in a hospital setting. However as time progressed it was realized that the service to humanity below the poverty line will bring more satisfaction than financial gain and this gain will be secondary.

Field Visits to Community Settings:

Many of us had not seen a rural area and we thought it to be a good opportunity for picnic. However a socio-demographic surveys revealed that:

- (a) the quantum of housing was inadequate.
- (b) desertification was noticeable.
- (c) Irrigation of crops was not possible due to scarcity of water.
- (d) Health facilities were inadequate or not available. We felt that improvement in these areas may be a major factor in health.

Group Discussions

The findings were analysed in group discussions in the Community Medicine Department and it was gratifying to note that following these discussions, a revolving fund was established with the assistance of a non-governmental organization for boring of well resulting in agricultural crop improvement and water supply to the houses through donkey carts.

Health of the Rural Population

During the field visits and dialogues with the residents in the community and with the help of the community health workers, it was revealed that a great majority of the rural population believed illness to be an act of supernatural forces and evil spirits. Patients were taken to religious places or treated with home remedies. Midwifery service was inadequate because of the fact that untrained females were using unsterilized instruments during midwifery and were using cowdung to the umbilical cord of the newborn in some families. This was due to the belief that cow dung had antiseptic properties. Family planning was not acceptable on the ground that it is against nature.

Motivation for a change in attitude of this behaviour to one of healthy life style proved to be difficult in the initial stages but with the progress of primary health care program implementation, more than 50% of the resident population were using the services of trained Traditional Birth Attendants and Community Health workers employed by the Baqai Medical College. This resulted in acceptance of advice on health behaviour and many women are coming forward for family planning advice.

Community Participation

Our initial thinking that the rural community with a low level of education may not be in a position to provide leadership. Subsequently however it was a pleasant surprise to learn that not

only was there a leadership potential but, some were involved in social work organizing educational programs and establishing welfare organizations. Moreover Community Health Workers and Traditional Birth Attendants appointed by the Baqai Medical college from amongst the residents of the rural population are actively involved as health team workers in the Primary Health Care (PHC) System.

Involvement in Primary Health Care (PHC):

Our involvement in the PHC technology gave us an impetus for health education of the beneficiaries regarding use of ORS, immunization MCH, Family Planning and personal hygiene. We noted with interest the excitement of the population on the establishment of an ophthalmological cell and that of community dentistry in the area.

Action on Felt Needs:

The discussions were held with the tutors. Towards the end of our first year we were thrilled to learn that the felt needs of the community identified by us resulted in action programme with support from non-governmental organization the ORANGI PILOT PROJECT, establishing a revolving fund. Water - supply through boring, improvement of agriculture, wood plantation, conserving waste water by its use in kitchen gardens and provision of cows, one to each family, grant of loans to small shopkeepers as well as education of women became possible.

Behavioral Sciences:

Initially we were finding these classes to be boring. However as we progressed work in community settings we were able to appreciate how essential it was for their application in bringing about changes in attitudes of persons toward positive health behaviour. Acceptance of family planning by women and tetanus immunization during pregnancy are noteworthy examples in this regard.

Research

Our first investigation was a socio-economic survey. It was discouraging to learn that the per capita income in this community was about \$60 per annum with a low literacy rate indicating a life style far below the poverty line. Subsequently

Knowledge, Attitude and Practice (KAP) studies were undertaken on personal hygiene, use of ORS in diarrhoea of children and breast feeding, and immunization. these investigations led us to identify the deficiencies in each area with the result that we were able to participate in health education of the community to motivate behavioral changes in acceptance of correct health information.

Evaluation

Evaluation was done on a quarterly basis on written documentation which was designated as a JOURNAL and a score was awarded during this period with a feed-back on the field work. This practice continues during every quarter during the first year. 1st quarter in the 2nd and 3rd year respectively and during the 4th year in each quarter and this continuous course assessment is carried out for the University examination score.

When we reached the 3rd year, we were assigned topics as student-instructors which gave us an insight in health education to groups of community and this practice was helpful in our dialogue with members of the community in our field settings and also our professional colleagues.

Conclusion

Ours is the first batch to complete the five year training in this College. Our constant involvement in community settings created an awareness that health does not imply mere diagnosis and treatment but extends far beyond the boundaries of a hospital. It was depressing to note that a large number of families had no access to optimum health services and were at the mercy of home remedies and quacks. Organizing PHC centres by Baqai Foundation and appointment of community health workers as well as traditional birth attendants has been a great relief to the village population for improvement of midwifery service thereby reducing maternal and infant deaths and delivery of health care by the community health workers.

It was gratifying for us to learn that our experience in community settings has opened a new chapter in our career and we expect to be active participants in the country's health system. We

have seen with satisfaction that the health related problems identified by us during the first year have now been fruitful. We notice that wood plantation is almost ready for marketing, fruits and vegetables are noticeable as agricultural produce. Families are using milk from buffaloes and the extra milk is sold for returnable loan. Water is supplied to individual households through donkey carts.

In the end it is gratifying for us to note that an inter-university task force has been working in the change of direction of the curriculum so that the training meets the requirement of the Pakistan Medical & Dental Council. Currently it is only in Aga Khan University Medical College and Baqai Medical College that the training in community Health begins from first year and goes up to the end of the 4th year while in other institutions this training begins in 4th year and is limited to one year. Some colleges however undertake its teaching both in 3rd and 4th year. Behavioral Sciences for which we have had the privilege of training by an eminent social scientist, is not existing in any other institution at undergraduate medical education level.

Writer's Note

How far the expectations of the future physicians will result in serving the rural communities is yet to be determined by a follow up but our experience in a sister institution with intensive exposure to community orientation and involvement of the students in the primary health care system shows that a vast majority of the students has emigrated to USA, Australia, Middle East and other countries. However an attempt will be made to follow up wherever possible.

Reference

1. Regulations of the Pakistan Medical & Dental council.
2. Report of workshop on National Priorities in Medical education,
3. Report of Follow Up of Inter-University Working Group in collaboration with Pakistan Medical & Dental Council (in progress).

HEALTH EFFECTS OF ETHYLENEDIAMINE.

MUBASHIR A. MALIK

*Department of Occupational Health
College of Community Medicine, Lahore*

Summary

The Study was done in a chemical factory manufacturing polyamides and using Ethylene diamine (EDA). Diethyltriamine (DETA), Triethylenetetramine (TETA) as well as xylene, toluene, caustic soda, sulfuric acid in secondary process. The whole procedure was enclosed, except worker were exposed to EDA while manually pumping and discharging the chemical. The results have shown that the workers in the exposed group were having chronic respiratory symptoms of cough 7/12, phlegm 8/12, wheezing 4/12, attacks of sneezing 7/12, and skin itching or rash 7/12. The lung functions i.e; FVC, FEV¹, FEV¹/FVC ratio were lower and diurnal variation in peak expiratory flow rates were higher in the exposed group. It is concluded that exposure to these substances poses greater risk for health of workers and special measure should be adopted for prevention.

Introduction

Ethylenediamine is an aliphatic amine⁽¹⁾, used in the production of many chemicals e.g., polyamide resin, corrosion inhibitors, rubber chemicals, synthetic waxes, as hardener in epoxy resins formulations, chelating agents and fungicides. It is also used as solvent for albumin, shellac, casein and sulphur, as stabilizer for rubber latex and as an inhibitor in antifreeze solutions.

It is known to cause occupational asthma, contact dermatitis, and visual disturbances in workers exposed to it at various polymerization stages. Due to its volatile properties, it can cause bronchospasm on acute exposures in high concentration in hypersensitive person. It is likely to cause dermatologic and ophthalmologic problems in acute as well as chronic exposures. Occupational asthma results from exposure to ethylenediamine used in various chemical processes.

In 1963, Gelfand⁽²⁾ described cases of allergic patients working in rubber industry, 3 cases of bronchial asthma working in beauty culture industry, and 7 cases of allergic manifestations/asthma working in lacquer and shellac industry.

Among the allergy manifested cases, one person was working in rubber industry where rubber accelerators, antioxidant plasticisers, as well as resins and diisocyanate were used. The other man worked for a manufacturer of machines for the processing of chemicals. The machines were usually tested with chemicals to be used. He was assigned to a machine and was exposed to amine hardeners (catalyst), polyester resins, tolylene diisocyanate and acetone. The cases from the beauty culture industry were using nail spray, and cold wave solution. The solutions were containing monoethanolamine as an ingredients. Among these cases, one case was husband of partner of a beauty parlor who was markedly sensitive and suffered a great deal of allergic coryza, chest tightness, and cough for many days after his wife's visits to the beauty parlor. Among the 7 cases from the lacquer and shellac industry, where they were found to be exposed to chemicals, ethylenediamine and hexamethylenetetramine, used as a solvent for shellac and as a paint thinner.

In 1975, Valeyeva K. H. et al⁽³⁾ repeated 16 cases of occupational asthma in employees engaged in the production of ethylenediamine (EDA). In this series, bronchopulmonary disorders were

studied among 16 EDA production worker. He found out that respiratory symptoms began several months to 4 year after exposure to the chemical and included prevascular and peribronchial consolidations, emphysema, and chronic pulmonary heart disease in 12, 10 and 3 patients respectively. Pulmonary function was significantly impaired in most of the subjects. The author concluded that chronic bronchitis and bronchial asthma may occur as a result of exposure to EDA. Early removal from the exposure can improve the patient's health.

In 1979, Lam and Chan-Yeung⁽⁴⁾ reported a case of occupational asthma due to exposure to ethylenediamine (EDA). The case was exposed to a large number of chemicals used in developing color photographs. He developed a specific and reproducible late asthmatic reaction after occupational type exposure test to EDA. Exposure to other chemicals, such as formaldehyde and Kodak developer CD2 and CD3 (p-phenylenediamine derivative) did not induce any asthmatic reaction. Results of a skin test with EDA was negative and precipitating antibodies to this chemical were not found. The late asthmatic reaction was not accompanied by an increase in the plasma concentration of histamine. The mechanism of the late asthmatic reaction to EDA is unknown. The case, who developed asthma from exposure to EDA, was proved by Inhalation test (Challenge Test).

In 1991, T.P.Ng et al^(5,6) reported a case of occupational asthma in a factory manufacturing polyamide, and using EDA, diethylenetetramine (DETA), triethylenetetramine (TETA), triethylene-pentamine (TEPA) as well as other compounds such as xylene, toluene, isopropyl alcohol, ethylacetate, caustic soda, sulfuric acid, etc. in secondary processes. The reported case was 31 year old Malay man, who worked for two years in a factory manufacturing polyamide, which was supplied for use as hardeners for epoxy-resin based paints. TETA 10-20% by weight was used in the largest quantity (about 400 kg per day), but this and all other volatile liquids (except EDA) were mostly handled in closed systems of reactant vessels and connection pipes and pumps. The worker's daily duties included manual pumping, transfer and discharging of EDA (5-10% by weight) at a point where hygiene inspection showed his likely exposure to significantly more EDA than the other

amines. He usually worked in the day shift for five and half days per week, but occasionally he also worked three nights a week or on weekends as well. The patient had previously worked in another chemical manufacturing factory, which exposed him to phenols but had no respiratory complaints until three months after he started work in the present factory. There were frequent episodes of cough, wheezing and breathlessness which were usually worse in the afternoon or at night, and were better on weekends, public holidays or vacations. Other workers appeared to have similar respiratory complaints as well. It is reported that another worker had also developed asthma while working previously in the same job. Although this worker was transferred to the store, he still experienced episodes of asthma now and then.

The patient was investigated, he had no previous history of asthma or atopy in the childhood although his sister presently had asthma. He never smoked cigarette. The investigations done were, serial peak flow measurements, bronchial provocation test and Histamine challenge test. The results of his histamine challenge test suggest that he had marked degree of non-specific bronchial hyper-responsiveness. It is possible that ethylene diamine induced asthma in this patient because he was susceptible.

However, it is also possible that non-specific bronchial hyperresponsiveness might be the result rather than the predisposing factor. Different types of studies on occupational asthma have shown, that the patients removed from further exposure, recovered from their occupational asthma, non-specific bronchial hyperresponsiveness and returned to normal, but reexposure lead to an increase in bronchial responsiveness.

All the reported cases had a history of exposure for a period varying from 2-4 years and developed occupational asthma. The study is designed with the aim to assess the respiratory morbidity among the workers exposed to EDA, DETA, TETA, TEPA.

Materials and Methods

The factory manufactured polyamide resins, to be used as hardener for epoxy-based-resin paints. The material used in the commercial synthesis included, dimeric acid and various other fatty acids and polyamines (EDA, DETA, TETA, TEPA), as

well as other chemicals such as xylene, toluene, isopropyl alcohol, ethyl acetate, caustic soda and sulfuric acid, etc; in secondary process. The whole process was mostly handled in closes systems of reactant vessels and connecting pipes and pumps. The EDA was manually pumped, transferred and discharged into the reactant tank. Work was done in the factory from monday to friday, during regular day time hours from 7:30 a.m to 5:30 p.m; except for some voluntary overtime on Saturdays and Sundays.

The exposed group consisted of 12 male production workers apart from the indexed case, an engineer and one chemist (who were not regularly exposed to chemicals at the production floor, were excluded from the study.

Due to the limited number of persons working in this factory the external control group was selected from the workers of another factory, who had little or no exposure to substances, which were likely to cause asthma. They consisted of general workers employed as loaders, forklift operators, storekeepers, general and house cleaners in an adjacent factory manufacturing plastic casings of television sets and computers. Both the groups were matched for age, sex race, smoking habits.

Each worker was administered a standardized questionnaire designed by American Thoracic Society⁷ using personal interview. The information collected included personal history e.g; age, sex, race, smoking; detailed occupational history; past history of atopy or asthma, and other respiratory and heart diseases. Questions on respiratory symptoms of chronic cough, phlegm, and breathlessness were based on the Respiratory Questionnaire used by the British Medical Research Council (BMRC); additional questions on attacks of wheezing and shortness of breath, irritation of nasal mucosa and skin were also related to occurrence at work, home, during weekends, or holidays.

Spirometric testing was done by using dry bellow spirometer (Vitalograph), which was regularly calibrated before use. The workers were explained about maximal forced expiratory maneuvers. Each worker performed three maneuvers with full force and effort. The highest reading among the three tracings for forced vital capacity (FVC), Forced expiratory volume in one second (FEV₁), and FEV₁/FVC ratio was taken, thereby fulfilling the

criteria laid down by the American Thoracic Society (ATS)⁽⁷⁾ for acceptability of the spirometric test. The values of lung volumes were corrected to the body temperature and pressure at saturation vapor pressure (BTPS). Height and weight were measured without shoes. FEV₁ and FVC were expressed as percent of predicated from their age, height, based on the prediction equations derived for local Chinese and Malays male.

Each worker was instructed on the use of Mini-Wright peak flow meter to take serial measurements of his peak expiratory flow rates, making three consecutive blows every three hours during the waking hours, i.e. during at work and at home, and recording on the form over one week. They were instructed for performing the maneuvers and recording of peak flow rates over one week. The highest reading from the three consecutive blows at each three hours interval was used to calculate the diurnal Variation in the peak expiratory flow rates (DV-PEER%) as follows:-

$$100 \times (\text{Highest reading} - \text{Lowest reading}) / \text{Highest reading}.$$

The diurnal variation in PEER % was calculated separately for each worker for each day. The highest diurnal variation in the week for individual worker was also calculated.

Statistical significance of differences in means and proportions between the group of exposed and un-exposed workers were tested using Fischer's Exact Test, as the sample size was small. Analysis of covariance of lung functions was used to control for the influence of confounders.

Results

Various characteristic of the two comparing groups are shown below in table.1:

The workers in the exposed group were younger as compared to the workers in un-exposed group but were having remarkably short duration of service, the longest duration of stay was five years, whereas the factory has been in operation for ten years. There were more number of smokers in the exposed group as compared to the un-exposed, but were smoked lesser number of cigarette for lesser number of years. A strikingly large number of workers had complaint of health problems at their present job (8-67 %) as compared to none in the un-exposed group. A larger number of workers in

exposed group were having chronic respiratory symptoms of cough 7/12, phlegm 8/12, wheezing

Table 1:

	Exposed Group (N = 12)	Un-exposed Group (N = 12)
Age in year	26.58	32.25
Race		
(a) Chinese	5 (42%)	6 (50%)
(b) Malay	6 (50%)	5 (42%)
(c) Indian	1 (8%)	1 (8%)
Height	167.7 cm	162.8 cm
Length of service	2.5 Yrs.	10.1 Yrs.
Current Smoker	7 (58%)	3 (25%)
Ex-smoker	1 (8%)	0
Non-smoker	4 (33%)	9 (75%)
Cigarettes smoked per day	11 (94.23%)	18 (3.46%)
Number of years smoked	8 (4.1%)	15 (4.6%)

4/12, attacks of sneezing, running nose or nasal blockage 7/12, skin itching or rash 7/12. The proportions were significantly higher than that normally expected in any group of male working adults, which is reasonably well represented by the group of un-exposed workers in this study (Table.2)

Table 2: Prevalence of Respiratory and other symptoms

	Exposed Group (N = 12)	Un-exposed Group (N = 12)
Age in year	26.58	32.25
Cough	7 (58.3%)	2 (16.7%)
Phlegm	8 (66.7%)	0
Wheezing	4 (33.3%)	1 (8.3%)
Attacks of sneezing		
running nose or nasal blockage	7 (58.3%)	0
Skin itching or rash	7 (58.3%)	1 (8.3%)

The 4 workers with complaints of wheezing, 7 workers with history of sneezing, running nose or nasal blockage and skin itching were neither having any past history of asthma nor of atopy and developed the symptoms after exposure to amine at the present workplace.

The lung functions of the workers in exposed group were not much different on Monday as compared to the un-exposed group. However, they had greater diurnal variation in their peak expiratory flow rates over the week than that shown by the workers in the unexposed group (Table 3). Four of the workers exposed to amines were having more than 15 % of diurnal variation in their peak expiratory flow rates on any of the working day. The diurnal variation in the peak expiratory flow rate tends to be greater during the working days i.e; from Monday to Friday, however this trend was not observed in the workers of un-exposed group.

Table 3: Lung functions and diurnal variation in peak expiratory flow rates

	Exposed Group (N = 12)	Un-exposed Group (N = 12)
Age in year	26.58	32.25
FEV ₁	3.58 (0.47)	3.13 (0.42)
FEV ₁ , % Predicted	106.35 (10.94)	103.73 (9.80)
FVC, L	3.95 (0.56)	3.78 (0.49)
FVC, % Predicted	106.84 (12.33)	105.18 (10.18)
FEV, FVC % (adjusted for age, smoking & job)	98.57 (5.5)	91.20 (4.8)
Mean DV-PEFR %		
ON FIRST DAY.*	8.24 (4.67)	4.82 (2.92)
ON FIFTH DAY**	7.52 (3.81)	4.44 (.126)
Max. DV-PEFR %.**	15.95 (4.46)	7.50 (3.45)

Discussion

Although due to small number of sample size in this study, it was difficult to draw any conclusion, but still greater prevalence for respiratory, nasal and skin symptoms among the exposed group left no doubt that there was a grave risk of health problems among the workers exposed to polyamines. Asthmatic symptoms and greater

diurnal variation of peak expiratory flow rates in the workers of exposed group bore a temporal relationship with the workplace exposure.

Occupational asthma usually affects about 5 % of the persons having exposure to the sensitizing agents, but in this study with such a small number of workers, one of the person was indexed case, four workers had asthmatic symptoms, seven had nasal as well as skin complaints, which clearly show higher risk of having health problems due to workplace exposure.

The striking feature of this study is the high prevalence of chronic cough, phlegm, wheezing, sneezing and running or blocked nose, and skin complaints in the workers of exposed group, which are the known effects of aliphatic amines on the mucous membranes. The mechanism of induction of asthma due to exposure to polyamines is not fully understood, however it is thought to be due to acquired hypersensitivity response.

As per previous reports the results of this study has also proved that workplace exposure to EDA, DETA, TETA and TEPA poses greater risk of occupational asthma and skin itching or rashes, which are used as curing agent in the manufacturing of the epoxy resin paints. It is quite

clear that strict personal protective measures should always be adopted while handling polyamines, in order to minimizing the health risks due to workplace exposure.

References

1. Aliphatic amines. ILO Encyclopedia. pp. 139-141.
2. Gelfand H.H Respiratory allergy due to chemical compounds encountered in rubber, lacquer, shellac, and beauty culture industries. J Allergy 1963-81.
3. Valeyeva K.H., L.A. Belomytseva, E.U. Khafizullin. Occupational bronchial asthma in employees engaged in production ethylenediamine. CCINFO. 1991 Rec : 156434. (In Russian).
4. Lam S, Chan-Yeung M. Ethylenediamine induced asthma. Am Rev Resp Dis 1980; 121: 151-155.
5. T.P.Ng, H.S.Lee, F.Y.W.Lee, Y.T. Wang, VIL.H.Tay, K.T.Tan. Occupational asthma due to ethylenediamine. Ann ; Acad Med Singapore 1991 ; 20,3 : 99 - 402.
6. H.S.Lee, T.P.Ng, Y.L.Ng, W.J.Poon. Diurnal variation in PEFR among PVC compounding workers. Br Jour Ind Med 1991 ; 48 : 275 - 78.
7. American thoracic society. Standardization of spirometry - 1987 update. Am Rev Respir Dis 1987 ; 136 : 128 - 98.

ROLE OF TRADITIONAL BIRTH ATTENDANTS IN REDUCING MATERNAL & INFANT MORTALITY

MAHMUDA MUBASHER AND ABDUL JAMIL CHAUDHRY

*Depts. of Public Health Practice and Community Medicine
College of Community Medicine & Allama Iqbal Medical College, Lahore*

Woman constitute about half the population of Pakistan, and they find themselves beset with problems (not of their own making) of maternal & child that have led to high mortality among women and infants. The role of traditional birth attendants, locally known as dais, is significant in so far as they are instrumental in conducting almost all deliveries in rural Pakistan where more than 70 per cent of population lives. Even in urban Pakistan where medical facilities are abundant and conveniently located, about 80 per cent of city mothers prefer to be delivered in the cosy comfort of their homes.

Pakistan, a land of 110 million, has an annual growth rate of 3.1 %. About 70% of the population lives in rural areas, and 45% of it is under the age of 15 years. We suffer from socio-economic and health care problems similar to those experienced by the other developing nations. Literacy rate is 26.2% (16% for females). In spite of industrial development, 55% of labour force is engaged in agriculture. Income per capita in 1987 was US \$ 350⁽¹⁾. Pakistan spends 1.1% GNP on health⁽²⁾.

Table 1: Crude Birth & Death Rates, Infant and Maternal Mortality Rate of Pakistan

Rate	1986
Crude Birth Rate	42.8/1000 Pop.
Crude Death Rate	10.0/1000 Pop.
Infant Mortality Rate	100/1000 L.B.
Maternal Mortality Rate	4-6/1000 L.B.

Source: 7th Five Year Plan Pakistan.

Health Status: Crude death rate is 10 per 1000, Infant Mortality Rate is 100/1000 and

Pakistan J. Health. Vol. 30 No. 1 - 4, 1993

maternal mortality 4-6/100 L.B. A major reason for such high mortality is mothers and children is attributed to poor quality of help during child birth. Antenatal care is hardly available for women in Pakistan⁽³⁾.

The current birth rate is 42.8 per 1000, pop⁽⁴⁾, approximately 4.6 million women experience childbirth every year. About 20% pregnancies end in fetal loss, at various stages of gestation, and neonates are the major victims of high mortality. It has been reported that 50% of infant mortality takes place in the neonatal period, and about 30% of this occurs in the first week of life⁽⁵⁾. At the prevailing rate we lose 18,480 — 27,720 mothers annually.

According to the world bank report, Pakistan along with India and Bangladesh is one of the few countries in the world where the life expectancy of women is shorter than that of men⁽⁶⁾. This is due to multiple factors which include undernutrition, anaemia, infection, septicaemia, toxemia and haemorrhage, all associated with repeated pregnancies and child birth at too short an interval, and a lack of access to adequate health services. Underlying all these problems is the extremely low rate of female literacy⁽⁷⁾.

Table 2: Literacy Rates
(10 years & above), 1981

Sex	Total	Urban	Rural
Both Sexes	26.2	47.1	17.3
Male	35.1	55.3	26.2
Female	16.0	37.3	7.8

Source: Population Census Organization,
Pakistan, 1981

Despite phenomenal scientific advancement in the field of medicine and obstetrics, there are vast areas of the developing world where ancient type of healers and birth attendants continue to function. In Pakistan, too, this situation still prevails.

The emergence of dais, as birth attendants, is the result of cultural evolution in response to a vital need in the community. That a woman in child birth needed support and assistance has been recognized since ancient times. She was assisted by her mother, mother-in-law or members of her family or clan. As social organization of the community advanced, the women who assisted at child birth regularly this service for personal gain. The art of midwifery was in the hands of women of low caste. A significant proportion of maternal and neonatal mortality and morbidity is attributed to the TBAs. Even in urban Pakistan, where a majority of medical care facilities are located, home continues to be a popular place for natality, as about 80% of city mothers are delivered at home, and the attendant of confinement is by and large the TBA. Traditional birth attendants are acceptable and accessible to the people, trainable and cost effective, they offer a comparatively reliable means of protecting and improving the health of mothers and babies in most areas of Pakistan. Indeed they are now regarded as essential community health workers, whose role may be crucial in primary health care.

Pakistan launched a training programme as part of AHP in 1983 for training 50,000 TBAs, one for each revenue village in the country during the 6th five year plan⁽⁸⁾.

Although the training programme is well within target, the level of their field utilization and the impact of their services in the community for reducing maternal and neonatal mortality has yet to be properly determined.

Calculations based on data from a small number of neonatal deaths collected as part of the EPI/CDD review conducted by NIH in April 1987 indicate that infants delivered by untrained TBAs are four to five times more likely to develop neonatal tetanus than those delivered by trained TBAs⁽⁹⁾ (more research is needed on this subject).

Evaluation of TBAs in Pakistan conducted by Health and Nutrition section of the Planning Commission in 1989 reveals that 80% of deliveries in rural areas are conducted by untrained traditional birth attendant, in spite of the fact that 37,379 TBAs were trained, with a per unit cost of Rs. 1900/ and were available to 55-60% of the village (23,931 villages).

The same study shows that mortality rate due to neonatal tetanus was nil amongst those delivered by trained TBAs as compared to 8.36/1000 L.B in those delivered by untrained TBAs⁽¹⁰⁾.

It has been further observed that there is no formal link between trained TBAs and health facilities to facilitate referral⁽¹¹⁾.

Table 3: Neonatal Mortality Rate by Trained & Untrained TBAs, 1989

Type of attendant during delivery	Deaths due to Tetanus	Deaths due to other causes	Total Deaths
Delivered by Trained TBAs	0/1000 LB	7.4/1000 LB	7.4/1000 LB
Delivered by Untrained TBAs	8.4/1000 LB	4.7/1000 LB	13.0/1000 LB
Total delivered	6.1/1000 LB	6.8/1000 LB	11.8/1000 LB

Source: Evaluation of Training of TBAs in Pakistan, Health & Nutrition Section, P&D, Islamabad.

Table 4: Medical Facility by Average Distance for Rural, Urban Residents, 1983-84

Medical Facility	Urban	Rural
Hospital	4.3	21.6
Dispensaries	1.7	9.9
MCH centres	2.5	18.1
Rural Health Centres	—	11.3
Basic Health Units	—	8.3

Source: Health Survey, Federal Bureau of Statistics, 1986

An important role of the TBAs should be referral of the women to the local health facility when needed⁽¹²⁾

Another study on impact evaluation of TBAs training programme in Punjab revealed gross deficiencies found in the knowledge and practices of TBAs with regard to antenatal, delivery and post natal management of mothers and neonates.

Trained TBAs have substantially better knowledge and only marginally better skills than the untrained TBAs. (Both groups of TBAs seemed to be ignorant of the significance of hand washing, conducting delivery in a clean place, avoiding trauma to initiate or hasten delivery, cutting the cord with sterilized articles).⁽¹³⁾

Table 5: Access to Water Supply & Sanitation Facility, 1987

Facility	Population Covered
Water Supply	44%
Sanitation Facility	24%

Source: 7th Five Year Plan of Pakistan

It should be clearly understood that the causes of high maternal and neonatal (Infant) mortality in Pakistan are multiple and complex, and TBA training may help in dealing with some of the

factors at present affecting maternal and neonatal health adversely.

In spite of considerable progress made in TBA training, (& EPI), much remains to be done, as infant and maternal mortality rates remain high in Pakistan.

This can be best understood by comparing the trend in Infant Mortality Rate over last 20 years both within Pakistan and with other countries in the region.

Table 6: Mortality rates of Infants (1955 - 79)

Period	Neonatal Mortality Rate	Post neonatal Mortality Rate	Infant Mortality Rate
1950-54	94	72	166
1955-59	85	53	138
1960-64	74	52	126
1965-69	70	46	116
1970-74	70	44	114
1975-79	83	42	125

Source: Infant & Child Mortality in Pakistan, Some Trends & Differentials, Z. Sattar, Journal Biosocial Sciences, 1985.
Population, Labour Force, migration Study, 1979 - 80.

Table 7. Regional Trend in Infant Mortality (1965 & 1985)

Country	1965	1985
China	158	35
Bangladesh	153	123
India	151	89
Pakistan	149	115
Sri Lanka	63	36

Source: World Bank Development Report, 1987.

In 1985, with the exception of Pakistan and Bangladesh, other countries in the region have made considerable progress in reducing Infant Mortality Rate especially Sri Lanka and China.⁽¹⁴⁾

There is an urgent need to prepare a comprehensive national programme for trained TBAs as an integral part of the primary health care system. Post-training back-up for TBAs including review of their performance should be an essential feature of the programme.

If appropriately trained and supervised, they can assume an extra role in immunization, Family Planning education, and the diagnosis, for referral, of various conditions, including anaemia, malnutrition and toxemia of pregnancy.

In view of the considerable progress made in recent years in TBA training, the proportion of the health budget available for preventive programmes has increased considerably.

If the achievements can be consolidated and expanded to include programmes aimed at the prevention and treatment on the common illnesses, and overcoming malnutrition under the umbrella of Primary Health Care, there is a potential to reduce Pakistan's infant and maternal mortality by 50% during the next five year plan.

References

1. UNICEF, the state of the world's children 1990, p.86
2. Planning Commission, Government of Pakistan, The sixth five year plan 1983-88, Islamabad: P.363

3. Awan, A.H, Mobilizing TBAs for the control of maternal and Neonatal Mortality in Pakistan, proceedings, of 2nd IAMANEH 1984, Munnastir/Tunis: P.341
4. Planning Commission, Government of Pakistan, The seventh five year plan 1988-93, Islamabad: P.271
5. Awan A.H, Present Perspective of Maternal and Neonatal Health in Pakistan and an approach to the problem through Primary Health Care, — Mother and child 1983, Lahore. P.5
6. Government of Pakistan and UNICEF country programme of cooperation, Situation analysis of children and women in Pakistan, 1988-1992, Karachi: P.45
7. Ibid: P.74
8. Planning Commission Health and Nutrition section Government of Pakistan, Evaluation of training of traditional birth attendants (DAIS) in Pakistan, 1989, Islamabad: P.10
9. Ibid: P.1
10. Ibid: P.19
11. Ibid: P.iv
12. World Health Organization, Maternal Mortality: Helping women off the road to death, 1985, Geneva: P.181
13. UNICEF, Impact Evaluation of TBA Training programme in Punjab, 1989, Lahore. P. 81.
14. Government of Pakistan and UNICEF country programme of Co-operation, situation analysis of children and women in Pakistan, 1988-1992, Karachi: P. 38.

ASSESSMENT OF VACANCY RATE AND UTILIZATION OF RESIDENTIAL FACILITIES AT BASIC HEALTH UNITS OF DISTT. GUJRAT

SHAHEENA MANZOOR

*Department of Maternal and Child Health
College of Community Medicine, Lahore*

Summary

The study was conducted in District Gujrat, touching a few provisions at B.H.U., i.e. staffing position and residential facilities with basic amenities. Study sample included 36 units out of 122 BHUs by stratified random technique. A simple pretested questionnaire was used. Data collected was processed manually. Vacancy rate of staff and utilization of residential facility was analysed, and it was observed that vacancy rate was lesser in this distt. than that of other distts. in the Punjab. In most of the cases the residential facility was found under utilized by 50% of the available facility, which was mainly due to nonavailability of basic amenities, i.e. water was not available at 28 % BHUs, electricity was not provided at 50 % BHUs and there was no road connection at 28 % BHUs.

Introduction

Health services encompass all personal and community health services including medical care, directed towards the protection and promotion of health of the community. Research into the use of these services is an important aspect of development of National Health System.

Health system development means progressive change to allow health objectives to be fully attained (1). Almost all nations of the world need to develop their health system to meet their needs. This is particularly true of Pakistan where we have more problems and there is need for change.

Mubarik and Shafique (2) conducted a study on the utilization of rural health facilities and the main reasons they revealed for under-utilization were inadequate female staffing, and low morale of doctors placed at rural areas where living conditions are not good.

Punjab task allocation study by Pricor gave two of the reasons for not using BHU, as absenteeism of staff, and non availability of staff at odd timings.(3)

Adequate staffing position and residence at BHU for availability at odd hour and minimum absenteeism from working place can have positive impact on utilization of health services.

Hence it was decided to have a survey of any one district of Punjab to see the staffing situation an availability of residences and their utilization. However, it was also kept in view that another study can be made to see if there is any difference in the turnover of patients in the health centres with strong staffing position and provision of residential facility with basic amenities.

Materials & Methods

Study Parameters:

Staff situation

- (i) No. of sanctioned posts.
- (ii) Filled posts.
- (iii) Vacancy situation.

Residential facilities

- (i) Availability of residence.
- (ii) Utilization of residential facility.
- (iii) Provision of water.
- (iv) Provision of electricity.
- (v) Road connection.

The study universe was district Gujrat comprising of 3 tehsils and there was 122

functioning Basic Health Units. Unit of study was Basic Health Unit. Representative sample of 36 Basic Health Units comprising of 12 BHUs from each tehsil were selected by stratified random sampling technique. Pretest was done and the questionnaire was amended. A list of the selected BHUs was made. Close ended questionnaire was used. Respondent was the M. O. of BHU studied, but at places, where M. O. was not available, the respondent was any one of the following staff member, M.A./H.T./Dispenser.

The staff position and the questions in the questionnaire were asked and reply was recorded, data were collected. The proforma were numbered and rechecked same evening, in order to rectify the mistakes if any. These were processed and analysed manually.

Results

Table 1: Staff situation in relation to sanctioned and vacant post

	Sanctioned	Filled	Vacancy	Vacancy Rate
M. O.	36	31	5	13.89
H. T.	36	29	7	19.44
L. H. V.	36	28	8	22.22
Dispenser	36	32	4	11.11
S. I.	36	06	30	83.33
Dais/Mid Wives	36	36	-	-
Chowkidar	36	36	-	-
Naib Qasid	36	36	-	-

Table 2: Residential facility available/utilized at B. H. Us.

Name of Post	Residential facility					
	Available		Utilized		Not utilized	
M. O.	23	63.89	8	34.78	15	65.22
H. T.	24	66.67	12	50.00	12	50.00
L. H. V.	31	86.11	15	48.39	16	51.61
Dispenser	29	80.55	17	58.62	12	41.38
S. I.	5	13.89	2	40	3	60
M. W/Dais	29	80.55	20	68.96	9	31.04
Naib Qasid	29	80.55	19	65.52	10	34.48
Chowkidar	Nil	Nil				

Chowkidar residing at BHUs without residential facility

Table 3: Facilities available at residences at B.H.Us

Name of facility	Available		Not Available	
	No.	% age	No.	% age
Water	26	72.22	10	27.78
Electricity	18	50.00	18	50.00
Road Connection	26	72.22	10	27.78

Discussion

Staff situation in Relation to Sanctioned and Vacant Posts

The term vacancy rate means number of posts lying vacant as percentage of the total sanctioned posts. The overall situation of the staff of BHUs at District Gujrat was found comparatively better in relation to overall situation of Punjab (4) as in almost every case vacancy rate

was found lesser in this particular district as shown in the following table :

Comparative vacancy rate

Name of Post	Vacancy in district Gujrat	Rate in Punjab
Medical Officer	13.89	Not available
Medical Technician	19.44	36.72
LHV / FMT	22.22	34.98
Dispenser	11.11	17.92
Sanitary Inspector	83.33	80.98
Mid-wife/Dai	Zero	14.72

However, it was noted that at certain BHUs, both LHV and FMT were present and at some BHUs, none of these two were present. On enquiry about this situation, it was told that this was due to political pressure of transfers.

Against 36 sanctioned posts of M. O. in the sample, residences were not available in 13 (36.11 %).

Against 36 sanctioned posts of health technician, residences were not available at 12 (33.33 %).

Against 36 sanctioned posts of LHV/FMTs residences were not available at 5 (13.89%). 7 (19.44%) Dispensers and 7 (19.44%) Midwives were without residence. 31 (86.11%) BHUs were without residences for S. I.

The results also show that :

15 (65.22%) Medical Officers.

12 (50.00%) Health Technicians.

16 (51.61%) LHVs/FMTs.

12 (41.38%) Dispensers.

3 (60.00%) Sanitary Inspectors.

9 (31.04%) Midwives/Dais.

were not utilizing the residential facilities.

Although the buildings were surrounded by proper boundary wall and locked gate, there were certain reasons observed through questionnaire for their under utilization which are as under :

1. 27.78% of units had no water supply at all.
2. 50% of residences were without electricity connection.
3. 27.78% of units had no road connection at all and 44.44% had Katcha road connection.
4. As stated by most of the personnel staff of B.H.U., there is lack of security measures specially for female staff.
5. Few staff members were residing in the villages nearby BHUs.

From this study, it may be concluded that if the investment made, as residences, is to be properly utilized, the residential facility should have proper portable water supply, electricity and proper road connection. This will make the staff to have comfortable living, giving them congenial environment to work as a result of which the Basic Health Units Services will be adequately utilized as the doctors/paramedical staff will be available even at odd timing to serve the community as proved by Mustafa G. Survey of B.H.U. of RHC in Sindh ⁽⁵⁾.

References

1. WHO/EMRO introducing an integrated managerial process in National Health Development. WHO/EMRO 1981 (Technical Publication No.5).
2. Mubarik M. Shafiq A. Utilization of Rural Health Facilities in Distt. Rawalpindi, PJMR, 1986.
3. Pakistan Pricor Punjab Task Allocation Study, 1989.
4. Directorate General of Health Services Statistical Division, monitoring and evaluation cell, Lahore Punjab, 1991.
5. Mustafa G. Survey of B.H.U. and R.H.C. in Sindh to assess the building utilization, Directorate of Human Resources Centre, Sindh regional plan organisation Planning and Development Deptt., Govt. of Sindh.

A COMPARATIVE STUDY OF UTILIZATION OF PHYSICIAN AND NON-PHYSICIAN HEALTH SERVICES BY A RURAL COMMUNITY

MAQSOOD AHMAD, SAEEDA RASHID, SHAHEENA AYAZ AND RASHID MASOOD KHAN
*Departments of Public Health Practice & Administration and
Bio-Statistics, College of Community Medicine, Lahore.*

Summary

This study aimed at assessing comparative utilization of Physician manned and Non-Physician Health Services in a Rural Community, through a household survey. The Utilization Ratio (U.R.) for Physician services was markedly low (U.R. 72) compared with Non-Physician services (U.R. 168). The Differential Utilization Rate (D.U.R.) for distant households was significantly low for Physician manned health facilities and it was significantly high for Non-Physician services. The overall D.U.R. for Non-Physician services (D.U.R. 67) was markedly high compared with Physician services (D.U.R. 29) and the difference was statistically significant. This state of affairs gives a clear indication that operational strategies should be directed towards Non-Physician health care personnel for their proper realization, better training and optimal incorporation into the total health care system.

Introduction

The Rural Health System of Pakistan is facing the problem of lack of resources alongwith their improper use. This is coupled with greater preference by the rural community for Non-Physician services and the services provided by the government remain grossly underutilized (1). Therefore despite tremendous expenditure on health care programmes the health status of majority of our population remains un-satisfactory.

This study focuses on comparative analysis of use of Physician (Doctors) and Non-Physician services in a rural community. Understanding of this factor can have a tremendous impact on the structuring of health system for maximum utilization of not only the Physician services in a health centre setting and at private clinics but also better utilization of Non-Physician health care practitioners.

Utilization of services is expressed as the proportion of people in need of a service who actually receive it in a given period usually in a year. The number of people who actually use services can be obtained relatively easily with properly designed recording system especially when

all types of public and private health services including the traditional medical practitioners are integrated into the system. The measurement of this type reflects the overall accessibility and utilization. But this is not the case with our health system. In such cases information can only be obtained through community based surveys. (2)

The earlier studies in this regard, mostly revolved around the public system of health care. But most of our people particularly in rural areas use private system of medical care. Hence there was a pressing need to study the overall utilization of both Physician and Non-Physician services in some defined area. For that matter a Union Council was most preferable because of its defined geography and population. Further it is the area which is considered to be the unit for providing at least one health facility by the Government.

Materials & Methods

The study aimed at assessing the overall utilization of different health facilities both public and private (including Physician and Non-Physician services) in some defined area, so that a clear

picture of service utilization process may be brought into view and hence recommendations may be made for proper utilization of all types of health services available.

The study universe included the population of union council Chung, district Lahore. This was selected for following reasons:-

- i. It has a defined area and defined population for the study of overall health services utilization.
- ii. It has both public and private health services.
- iii. It is the typical representation of rural population clusters.
- iv. Important were the feasibility factors i.e., time, costs and manpower available.

Union council Chung is located about 20 kms. from Lahore on both sides of Multan Road. It covers an area of 7087 acres and includes 8-villages. It has a population of 16797 persons with a male to female ratio of 113. There are 2753 households in total. Growth rate for the area is 3.8 % and average family size is 6. According to 1981 population census literacy rate for the area was 16.8 % (3). The village Chung has a Rural Health Centre, one private Doctor (Physician) three Hakims, three Paramedics and a Family Welfare Centre. All the other villages have no health facility.

A household was taken as a sampling unit because of the fact, individuals in a household have similar health practices which are influenced by the different characteristics of the head of household. A household was defined as a group of persons living together in a separate and independent place and a single person as their head, called head of household. Head of household was defined as the person whom the members of household considered as their head.

Systematic sampling technique was used for selecting sampling units - Every third household was interviewed in all the villages starting with a household selected at random. The house holds were divided into two groups. The grouping was based upon the distance of the village from Rural Health Centre and other health facilities. Group - A villages with 2293 households are located within 2-kms. of the health facilities. Remaining 4-villages with 460 households are located 7-kms. and more from the main facilities and constitute Group-B. The study sample consisted of 760 households (4 were not available even on 2nd contact) from Group - A and 153 households from Group - B

villages. In this way total study sample included 913 households (Population- 5599) for study purpose.

Data collection was done through household survey. The head of household or his representative was interviewed with the help of a closed questionnaire. The questions focused on enquiry about number of visits by each individual of the household to different health facilities in the previous one year. Six female interviewers were selected, trained and pretested in the art of interviewing.

SPSS PC Software was selected for Data processing and analysis. at final stages LOTUS Package was also used. Following formulae were used for calculating the Utilization Ratio and Utilization Rate.

1. Utilization Ratio for a Service (U. R) = $\frac{\text{No. of total patient visits for that service in year.} \times 100}{\text{Total Population of the area.}}$
2. Differential Utilization Rate for a Services = (D.U.R) = $\frac{\text{No. of total patient visits for that service in a year} \times 100}{\text{Total No. of expected patient visits in the same year.}}$

Results

Table - 1 shows the Utilization Ratio (U.R) for Physician services. The overall U.R. for R.H.C. Chung was 60 (62 for Group - A Villages and 53 for Group - B Villages). This means, 60 - visits were made to R.H.C. Chung by 100 individuals in a year. The corresponding Ratio for private Doctor was 11 and for other health facilities it was 1. The total U.R. for all Physician services was 72. The figure for Group - A villages was 74, and for Group - B it was 64.

Table 1: Utilization Ratio of Physician Services

Types of Service	Group - A Villages	Group - B Villages	A + B
RHC Chung	62	53	60
Private Doctor	11	10	11
Other Govt. Health Facilities	1	1	1
Total	74	64	72

Table - 2 shows a very high U.R. of 142 for Paramedics (Dispensers + LHV.) as compared to other Non-Physicians. The figures for Hakims and Spiritual Healers were 21 and 3 respectively. For all other types (including Chemist, Untrained Dai and Homeopath) the U.R. was 2. The overall U.R. for Non-Physician services was 168, with 149 for Group A Villages and 262 for Group B Villages.

Table 2: Utilization Ratio of Non-Physician Services

Types of Service	Group - A Villages	Group - B Villages	A + B
Paramedics	128	209	142
Hakim	18	49	21
Spiritual Healers	2	7	3
Others	1	6	2
Total	149	262	168

Table No. 3 highlights the summary findings through Differential Utilization Rates (D.U.R.). To compute D.U.R., the number of expected visits were calculated on the basis of episodes of illness which require some form of consultation. In this case a standard of 2.5 episodes per individual per year was taken (4). The D.U.R. for Physician services was 29 in Group A Villages and 26 in Group B Villages. This means that out of 100 expected visits for Group A only 29 visits were made. Similarly for Group B Villages 26 visits were made against the 100 visits and the difference between the two village groups was statistically significant (Z at 5% level of significance ± 1.96 and $P < 0.05$).

For Non-Physician services the difference was strikingly very high and was statistically significant. (Z at 5% level of significance ± 46). The overall D.U.R. for Physician services was very low i.e; 29, as compared to Non-Physician services i.e. 67. This difference was statistically significant (Z at 5% significance level ± 63).

Table 3: Utilization Ratio of Physician and Non-Physician Services

Types of Service	Group - A Villages	Group - B Villages	A + B
Physician Services	29	26	29
Non-Physician Services	59	105	67

Discussion

The average number of episodes of illness requiring medical care per person per year for the developing countries is between four and five. This means that a person should contact a health facility 4-5 times in a year. Considering the socio-economic factors alongwith lay practices and perceptions of illness, a low level of sickness may be taken i.e. 2.5 contacts per person per year (5). Looking at the Chung rural population, although 82.64% (Group A Villages) of the total population is within easy reach of 2km. from the Physician manned health facilities yet the Utilization Ratio of those outlets is only 72 (72 visits per 100 people per year) as against the standard of 250 ($2.5 \times 100 = 250$) This does not mean that people are not consulting for their health problems. They do consult but the Non-Physicians and the U.R. is much higher i.e. 168, compared with the Physician services. Among the Non-Physician services the rate was highest for Paramedics (U.R. 142) showing that the most preferred mode of consultation being the "Modern Medicine" as compared to Hakims and other traditional healers. This finding is consistent with an earlier study (6).

There are multiple reasons for preferring the Non-Physician services, particularly the Paramedics and Hakims. Mostly these health personnel are among the people themselves and enjoy the confidence of local population. Secondly they are easily available and accessible, thirdly they exploit the lay norms. There are negative factors related to physician manned health facilities as well which divert the people for consultation towards Paramedics and traditional healers. Some of the factors mentioned in earlier studies (7-10) are long distance, unsatisfactory treatment, non-availability

of staff, long waiting time, non-availability of drugs unsuitable working hours etc.

Taking the distance factor into account, it shows that distance did affect the Physician services (U.R. for Group A; 74 and for Group B; 64) but did not, Non-Physician services (U.R. for Group-A; 149 and for Group B; 262), rather Group B, household were utilizing more Non-Physician services. However another factor of lack of awareness about the presence of Physician services may have contributed for higher use of Non-Physician services.

This total picture shows that people do suffer from illness which require some form of consultation, at about three times a year. They do visit physician based services but their preferred mode of consultation is Non-Physician services. And among the Non-Physicians the Paramedics ranked highest followed by Hakims. This state of affairs gives a clear indication that just increasing the Physician manned health facilities is not the solution to the problems of 'coverage' and 'accessibility'. Rather operational strategies should be directed towards proper realization, better training and optimal incorporation in the total health care system, of the Non-Physician health care personnel.

Presently government has taken a step forward in this direction by registration of Traditional Health Facilities. But the result is only of parallel working and development of professional jealousy (which require a study in its own right). The cooperation must be gained at community level. The Village Health Committee can play the main role. The committee, alongwith the representatives

from Physician manned health facilities can invite the Non-Physician health care personnel in their meetings and take their advice as well. This may lead to conflicts at times, but with the passage of time group relations will develop and the community itself will assign the roles to both Physician manned and Non-Physician health care facilities.

References

1. Siraj-ul-Haq M, Kazmi S.I, Haq M.B, Abdur R, Raja A.A. Accessibility of health establishments and their utilization. PJMR 1982; 21: (3) : 3 - 16.
2. WHO. Development of Indicators for Monitoring Progress towards Health for All by the year 2000. Geneva: WHO 1981: 27. (HFA Series 4)
3. Govt. of Pakistan. Population Census 1981 District, Lahore. Islamabad: Population Census Organization of Pakistan, 1984:67
4. Siraj-Ul-Haq M.Op. Cit., 3 - 16.
5. Ibid., 3 - 16.
6. Siddiqui M.A. Availability and Utilization of health services in a semi urban area. In: Khan A, Tariq N, Tasleem A, eds. Proceedings of the Medical Research Congress P.M.R.C. Peshawar: P.M.R.C, 1982: 271 - 281.
7. Vagel L.C, Sjoerdsma A.C, Woigo H.H, Swinkles W. Management of an outpatient department. Tropical Doctor 1977; 7: 21 - 24.
8. Cartwright A. Health Survey in Practice and in potential. London. King Edwards Hospital Fund for London, 1963: 59.
9. Abbasi N.A, Beg I, Chauls D, et al., Report of the Mid-Term evaluation Team, Pakistan Primary Health Care Project. Islamabad: Government of Pakistan - USAID, 1985: 44.
10. Mubarak M, Shafiq A. Utilization of Health Facilities in District Rawalpindi. PJMR 1987; 26: (1) 12 - 25.

BRIEF REPORT

HYDATID DISEASE - SOME UNUSUAL SITES

I.A. NAVEED, R.J. RAJA & C.M. SALEEM

Departments of Parasitology & Pathology
College of Community Medicine & King Edward Medical College, Lahore

Summary

Three cases of Hydatid Disease were seen recently at very unusual sites. The first was presented with a cystic swelling on the umbilicus, second, in the lumbar spine and the third in the buttock. These sites being quite unusual for this disease, are reported here to share with the experience of other Colleagues.

Introduction

Hydatid disease is a zoonosis being transmitted to and from dogs to cattle, sheep etc. and vice versa. Man gets involved in the cycle picking up infection either through close and intimate contact with the pet dogs or in cattle and sheep raising situations where the dogs are kept for the protection of these animals.

Case Reports:

No: I. A young woman presented with a cystic mass on her umbilicus which started 6 months back as a small nodule and has grown to the present size of about 4 cm in diameter. It was soft, cystic and has become painful. This was excised in a local hospital and submitted for biopsy.

No: II. A male of 35 years presented with low backache which started about two years back and has gradually increased in intensity. Clinically and radiologically the case was diagnosed as prolapsed disc and was operated upon. On exploration a cystic mass was seen extending to the space between 3rd and 4th lumbar vertebra. During dissection a number of rounded white cysts were delivered from the main cystic mass, without realizing the nature of the lesion at the time of operation. All the specimen was submitted for histology.

No: III. A female of 45 years presented with soft cystic mass on here right buttock, which was

explored surgically and found to be located deep in the muscles. It was excised and sent for histopathology.

Methods and Results

Representative tissue from all these specimens was taken and processed for paraffin blocks, multiple sections were cut and stained by H and E technique. On microscopic examination, they showed the morphology of classical Hydatid cyst.

Discussion

Hydatid disease has a world wide distribution. It is caused by larval form of *Echinococcus granulosus* mainly. However *E. multilocularis* and *E. vogeli* may also infect the human being (1). In Pakistan Hydatid cysts are quite frequently observed, particularly in sheep raising areas. In addition to individual case reports (2, 3, 5, 6, 7) a large series of Hydatid disease has been reported by Jamal and Jafery (4), which reveals a wide range of its localization. The commonest sites were liver, lungs, brain, bones & kidney. The less frequent sites were orbits, breast and abdominal wall. In an other similar study by Naru and Saleem (8), liver was the commonest sites among the abdominal viscera, followed by intestine, kidney and mesentary. Lungs were not involved in this series. All the sites described in this report have not been

Hydatid Disease - Some Unusual Sites

documented previously. Although a rare cause, Hydatid cyst must be kept in mind for all soft cystic lumps even at unusual sites as reported here.

Comments

Since dogs are closely associated with man in many situations, human infections can be prevented to some extent by avoiding this contact. Deworming the dogs atleast one or twice a year and destruction of stray dogs where-ever possible are the other measures to check the transmission of the disease.

References

1. Lweis TW, Koss NM Kasstein MD. A review of Echinococcus disease. 1975; 181 : 390 - 396.
2. Zafar A, & Latif S. Hydatid cyst in the groin JPMA 1988; 38 : 245.
3. Chughtai AS., Nagi AH. Orbital Hydatid. Biomedica 1986; 2: 99.
4. Qamar Jamal & Jafarey NA. Hydatid Cyst at Jinnah Postgraduate Medical Centre, Karachi. JMPA; 1989, 39 : 320.
5. Kazi J.I., Khan A, Raza-ur-Rehman. Hydatid cyst of breast a rarity. JMPS 1989; 37 : 330.
6. Sabiha Riaz, Hydatid disease of breast. Pak. J. Med. Res. 1989; 28 : 245.
7. Janbaz Ahmad and M. Athar. Hydatid cyst of Breast, Biomedica 1990; 9 : 82.
8. Naru, N.A., Saleem, C.M. Incidence and Epidemiology of Hydatid Disease in West Pakistan. A Preliminary Assessment. Pak. 1966, 16; 2 : 71.

A STUDY OF NON A NON B HEPATITIS WITH SPECIFIC REFERENCE TO HEPATITIS E

RIZWAN ULLAH KHAN
*Department of Infections Diseases
College of Community Medicine, Lahore.*

Summary

120 jaundiced patients from various hospitals in Rawalpindi and Islamabad were studied together with their serum and faecal samples for the presence of acute viral hepatitis and to visualize hepatitis E virus particles in the faeces of those suffering from non A and non B hepatitis, by electron microscopy. 42.5% of those studied were positive for HBs Ag, 55.8% were suffering from non A non B hepatitis and only two patients were positive for anti HAV IgM antibody. No hepatitis virus particles could be detected on electron microscopy. This small study confirms the high prevalence of non A non B hepatitis; further community based studies are required including development of more sensitive and practical diagnostic tests. The continued clinical importance of hepatitis B merits more aggressive prevention programmes.

Introduction

Viral hepatitis is a common problem in developing countries like Pakistan with wide ranging public health implications. Apart from economic and social burden of acute hepatitis with a small but definite risk to life, there is a considerable incidence of chronic infections with progression to cirrhosis, liver failure and hepatocellular carcinoma.

Tremendous progress in the medical knowledge has revealed a wide range of different and unrelated viruses responsible for various types of viral hepatitis. Five types have been recognised which are named as hepatitis A, B, C, D, and E.

Hepatitis A or infectious hepatitis is endemic in Pakistan whereas hepatitis B, or serum hepatitis, ranges upto 10% of the general population(1, 2). The prevalence of hepatitis C is not yet clear. Hepatitis D or Delta agent, basically a defective virus occurs in association with hepatitis B and generally has a low prevalence in Pakistan (3). The most recently recognised, hepatitis E, is a water borne infection considered to be endemic in Pakistan (4) as well as the cause of many epidemics (5) in the past few years.

Hepatitis E, formerly known as enterically transmitted non A non B is a newly discovered

form of AVH that is common in many tropical and subtropical countries. There are no serological tests available for it, therefore the diagnosis rests on epidemiological grounds together with exclusion of other viral and infectious causes (6). Virological confirmation depends upon electron microscopy of faeces during early symptomatic stages of infection (7). Acute hepatitis E has a high mortality in pregnant women especially in later stages (8). All these features demand a better understanding of this infection with an aim to prevent the virus from affecting millions in the developing world.

This pilot study was undertaken to examine the prevalence of hepatitis A, B and non A non B, in the jaundiced patients with specific reference to hepatitis E, in the twin cities of Islamabad and Rawalpindi and to summarise clinical and demographic features of jaundiced patients. another objective was to retain faeces from the patients thought to have hepatitis E and visualisation of hepatitis E virus particles by electron microscopy.

Materials & Methods

Patients:

A total of 120 patients were included in this study which were obtained from various hospitals

Study of Non A Non B Hepatitis

of Rawalpindi - Islamabad region. They were divided to three groups. Cases below 15 years were considered to be the paediatric age group.

Group I: included a mixed population of 50 cases with possible hepatitis who presented to Pakistan Institute of Medical Sciences, Federal Government Services Hospital and Rawalpindi General Hospital between 12 May 1992 and 15 Jun 1992.

Group II: included 60 male patients with acute hepatitis documented between 21 March 1992 and 17 May 1992 at Military Hospital, Rawalpindi. These were randomly selected from a large bank of stored data and samples.

Group III: included 10 pregnant women suffering from acute hepatitis who presented to the Military Hospital during the same period of time.

Routine Tests:

All the patients were diagnosed on the basis of history, physical examination and routine laboratory investigation. They were interviewed using a standard proforma covering the basic demographic and clinical features. The results of routine blood tests were also recorded including complete blood count, differential counts, haemoglobin estimation, prothrombin time, serum bilirubin, alanine aminotransferase (ALT), aspartate aminotransferase (ALT), and serum albumin.

Sampling:

5 to 10 ml of blood was drawn from each of the fifty patients and centrifuged at 2000 RPM for 10 minutes in order to separate the serum for storage at -20°C, later to be transported to U.K. In addition to this the other 70 serum samples along with respective faecal samples were kept in the storage freezer at the P.U.L.S.E at -70°C. Later all the specimens were packed in dry ice only a few hours before being flown to Liverpool. The samples were stored in Department of Medical Microbiology, University of Liverpool, under appropriate conditions, where necessary serology and electron microscopy was done on serum and faecal specimens respectively.

Serology:

The sera were tested for the following Hepatitis sero markers by commercially available ELISA Kits (Biokit S.A, Wellcozyme) in accordance with the recommended procedure:

1. HBs Ag.
2. Anti HAV IgM antibody.
3. Anti HBc IgG antibody.
4. Anti HBc IgM antibody.

Manipulation of sera was done in a safety cabinet used for processing high risk specimens.

Criteria for Diagnosis.

	HBs AG	Anti HBcIgM	Anti HAVIgM
Acute Hepatitis A	-	-	+
Acute Hepatitis B	+	+	-
Acute Non-A, Non-B	-	-	-

Electron Microscopy:

Prepared grids were than viewed on a Philips 301 transmission electron microscope at a screen magnification of 45000 times.

Results

A total of 120 patients were included in this study. They were divided into three main groups for the sake of convenience. They are described as follows and important features are summarised in table (a) and (b).

Group I

This group consisted of a mixed population of fifty patients of which 17 (34%) were female and 33 (66%) were male. The mean age in this group was 34 years ranging from 3 years to 65 years. all these cases belonged to a low socio economic group. One third of the cases had a previous history of jaundice and the other third had a previous history of blood transfusion. The average duration of present symptomatology was 15 days. The most common symptoms reported were fatigue and vomiting. Thirty percent of the cases had liver enlargement.

As regards serology, two cases were found to be positive for anti HAV IgM antibody, that is they were suffering from acute hepatitis A. 21 (42%) of the cases were positive for HBs Ag and were further tested for anti HBc IgM and IgG. The

Table (a) Salient features of the three groups studied

1	2	3	4	5	6
	No.	Mean Age (S. D.)	Sex (%) M / F	Past history Jaundice (%)	Past history blood transfusion (%)
Group 1	50	34 (16)	M 33 (66) F 17 (34)	18 (36)	16 (32)
Group 2	60	28 (6.4)	M 60 (100)	14 (24)	7 (12)
Group 3	10	27 (7.2)	F 10 (100)	5 (50)	0
Total	120	30 (4.2) F 27 (22.5)	M 93 (77.5)	37 (31 %)	23 (19)

Table (b) Symptoms/signs of the three groups studied

	Jaundice (%)	Vomiting (%)	Diarrhoea (%)	Fatigue (%)	Fever (%)	H/megaly (%)	S/megaly (%)	CLD signs (%)
Group I	50 (100)	32 (64)	22 (44)	46 (92)	11 (22)	25 (50)	10 (20)	14 (28)
Group II	60 (100)	18 (30)	6 (10)	47 (78)	8 (13)	38 (63)	5 (8.3)	NA
Group III	10 (100)	8 (80)	5 (50)	8 (80)	4 (40)	3 (30)	NA	1 (10)
Total	120 (100)	58 (48)	33 (27.5)	101 (84)	23 (19)	66 (55)	15 (12.5)	15 (12.5)

Table (c) Serological results of HBsAg positive patients

Groups	No. of Cases	Anti HBc IgM		Anti HBcIg	
		Positive	Negative	Positive	Negative
I	21	7	14	13	8
II	27	8	19	14	13
III	3	0	3	3	0

results are summarised in Table (b). 28 (56%) cases were negative for all the serological tests performed, hence presumed to be the cases of non A non B hepatitis.

Group II

This group comprised 60 male military personnel belonging to low socio economic class as most of them were from the lower ranks of the army. The average age in this group was 28 years ranging from 18 to 45 years. 14 (23%) of the cases had a previous history of jaundice and 7 (12%) had a previous history of blood transfusion. Mean duration of present symptomatology was 8 days. The commonest symptoms besides jaundice were fatigue and malaise. None of the cases was positive for anti HAV IgM antibody. 27 (45%) were positive for HBs Ag. These cases were further tested for anti HBc antibody and the results are summarised in Table (c). The remaining 33 (55%) cases were negative for all the serological tests performed therefore presumed to be suffering from non A non B hepatitis.

Group III

This was a small group of 10 pregnant women, all belonging to a low socio economic group. All of them were in second or third trimester of pregnancy. The average age was 27 years, ranging from 20 to 40 years. Half of the cases had a previous history of jaundice. The mean duration of present symptomatology was 11 days. Common symptoms were fatigue, vomiting and diarrhoea besides jaundice. 30% of cases had hepatomegaly. No case was positive for anti HAV IgM antibody, however 3 (30%) were positive for HBs Ag and the results of further serology are summarised in Table (c). Rest of the cases were negative for all the tests hence presumed to suffer from non A non B hepatitis.

Electron Microscopy

39 faecal specimens were examined for virus like particles with the electron microscope but none of them was positive for hepatitis virus particle.

Discussion

The present study was undertaken with the prime aim of examining the prevalence of acute hepatitis and identifying the patients suffering from non A non B hepatitis. Limitation of time and

other logistic problems could only permit inclusion of a limited number of cases. The cases collected in such a short time were by no means representative of the population in general and the design of the study was descriptive in nature rather than being comparative. Despite all these drawbacks, it has come up with certain results which give some insight into the problem and opens doors for further research of a similar nature.

Two cases out of a total of 120 were shown to be suffering from acute hepatitis A: both of them were children. This was an expected result as the Pakistani population is exposed to HAV infection at a young age and 96-100% of the population of different socioeconomic groups become seropositive for anti HAV by the age of 20 years (9).

HBsAg detection was done to diagnose acute infection and to screen for the carrier state. Detection of HBsAg in serum indicates that an active HBV infection, either acute or chronic, is present. 51 (42.5%) of the cases were found to be positive for HBsAg, which is quite a high rate of positivity. This result is similar to studies done in Pakistan (2) where 69% of the cases were found to be positive.

Further serology carried out on these patients revealed different patterns of HBV infection. 7 (13.7%) cases were positive for anti HBc IgM but negative for anti HBc IgG. This suggests an acute hepatitis B infection with detectable HBsAg. 22 (43%) patients were positive for anti HBc IgG but negative for anti HBc IgM thus showing past exposure to hepatitis B infection. Conventionally, carriers are identified by persistence of HBsAg and anti HBc IgG for at least 6 months. Another sample therefore becomes important after 6 months so as to confirm the carrier state. 8 (15.6%) patients were positive for both anti HBc IgM and IgG and were classified as suffering from acute hepatitis B, anti HBc IgM being the key marker. The last group of 14 (27.4%) cases were negative for anti HBc antibody (IgM and IgG). These were presumed to be either in very early infection/incubation period or very chronic carriers. Anti HBs antibody estimation should have been done on these specimens. This result is somewhat unusual and needs reevaluation; virtually all HBsAg positive sera from acute and chronic hepatitis B patients will be anti HBc positive since

it is during the earliest stage of acute hepatitis B, prior to liver abnormalities or clinical symptoms, that anti HBc positive reactions do not accompany the HBsAg response, thus such a serologic profile must be re-evaluated to exclude non specific reactivity in either of the tests especially the HBsAg assay.

All the cases which were negative for limited serology performed were presumed to be suffering from non A non B hepatitis. A more detailed protocol is required for diagnosis of jaundice in these cases. These include other viral infection with yellow fever, rubella, rubeola, varicella, coxsackie and herpes and infections with exotic agents as Mrburg, Lassa, Ebola and Rift valley fever. Two viral agents that merit more serious consideration are two herpes viruses, Epstein-Barr virus and cytomegalovirus, both of which can be transmitted by transfusion and can cause hepatitis as a part of more generalised systemic illness. Other conditions which can contribute to liver dysfunction like hepatotoxic drugs, biliary tract disease, sepsis, shock, anaesthetic agents, alcohol, bacterial, mycobacterial, spirochaetal, fungal, rickettsial and parasitic infections should have been excluded.

Delta infection which may be superimposed on hepatitis with non A non B agent cannot be ruled out. Tests for anti HDV could not be done due to non-availability of kits.

As all cases were of an acute nature, the chances of getting anti HCV positive cases were remote, as detection of anti HCV antibodies by serology is possible, but only generally several months after an acute infection. The test therefore for anti HCV antibody was not carried out. However, PCR (polymerase chain reaction) can be used for the detection of anti HCV at an early stage.

This study revealed that 68(55.8%) of cases were suffering from non A non B hepatitis. This is similar to the study done in Pakistan(1) where frequency of non A non B hepatitis was 77.1% and it was considered to be the most important type of hepatitis in Pakistan. Frequency of 58% reported from India (10) is closer to the frequency observed in this study.

We were unlucky to get no positive results as far as electron microscopy for faecal specimens was concerned. Thirty nine faecal specimens from patients considered to be suffering from non A non

B hepatitis examined by electron microscopy but none of them was positive for the presence of virus-like particles. If the results of other studies are considered, the success rate appears to be very low eg 1:28 (7); 2:22 (11), 10:95 (12). As different viruses have different timings of being shed in the faeces, for example in case of hepatitis A minimum viral shedding occurs just before the onset of jaundice, so it may be that the timing of collection of faecal specimens was wrong in this study.

According to a Chinese study (13), a high proportion of patients with hepatitis E shed the virus in faeces during late incubation period and early acute phase. Sixty serial faecal specimens collected from 6 patients with hepatitis E during the epidemics were examined by immune electron microscopy, virus particles were found in the faeces of 83.5% of the patients, and in 28.3% (17/60) of the total faecal specimens collected. All of the stool samples obtained 1-4 days before onset of disease were positive for the virus and rate of positivity was fluctuating 1-12 days after the onset of illness. However, 22 stool specimens obtained 13-14 days after the illness were negative for virus particles. In comparison with this Chinese study faeces were collected from our patients at between 2-16 days after onset of illness with a median of 7 days. Occasional positive results would therefore have been expected from faecal samples collected at this time yet all were negative. Moreover, a million virus particles must be present for detection by electron microscopy.

In the pregnant group, 3 cases were seen to positive for HBsAg and the remaining 7 were presumed to be suffering from non A non B hepatitis. As the sample was very small a firm opinion could not be made that non A non B hepatitis is the commonest type of hepatitis in pregnancy, as concluded in some studies.(14)

Considering the high prevalence of hepatitis B, studies should be undertaken to evaluate the risk factor for hepatitis B (blood transfusion, syringe transmission, etc.) Prevalence of hepatitis due to other major causes should be studied for example CMV and EBV. There should be comprehensive health education programme for health care personnel so that the risk of transmission can be minimised. Strategy for immunization should be formulated and vaccination against hepatitis B included in the current EPI programme.

Acknowledgement

I wish to thank Dr. N. J. Beeching, Senior Lecturer, Department of Infectious Diseases, Liverpool School of Tropical Medicine and Prof: C.A. Hart, Head of Department of Medical Microbiology, Liverpool University, U.K. Thanks are also due to Prof. I.A. Malik, Principal Research Investigator, PULSE, Army Medical College, Rawalpindi, and Dr. Sameen Siddique, consultant Physician, P.I.M.S; Islamabad.

References

1. Malik IA, Luqman M, Ahmad A, Khan A and Legters LJ. Sporadic non A, non B Hepatitis: A seroepidemiological study in urban population. *JPM* 1987; 37(8) 190-193
2. Malik IA, Legters LJ, Luqman M, Ahmad A, Qamar MA, Akhtar KAK, Qureshi MS, Duncan F and Redfield RR. the serological markers of hepatitis A and B in healthy population in northern Pakistan *JAMA* 1988; 38, 69-72
3. Malik IA, Ahmad A, Iqbal M, Legters LJ, Luqman M and Akhter M. Infection with Delta Agent in Pakistan. Introduction of new hepatitis Agent. *JPM* 1988, 38, 126-128
4. De Cock KM, Bradley DW, Sanford NG, Govindarajan S, Maynard JE, Redeker AG, Epidemic non A, non B hepatitis in patients from Pakistan. *Ann intern Med* 1987; 106, 227-230
5. Malik IA, Qureshi MA, Luqman M, Qamar MA, Ahmad A, Legters LJ, Ahmad M and Akhtar MA. Epidemics of non A, non B hepatitis in Pakistan. *Trop Doct* 1988; 18, 99-101.
6. Balayan MS, Andjaparidze AG, Ssvinskaya SS, Ketiladze ES, Baraginsky DM, Savinov AP and Poleschuk VF. Evidence for a virus in non A, non B hepatitis transmitted via the fecaloral route. *Intervirology* 1983; 20, 23-31
7. Arankalle VA, Ticehurst J, Sreenivasan MA, Kapikian AZ, Popper H, Pavri KM and Purcell RH. Aetiological association of a virus like particle with enterically transmitted non A, non B hepatitis. *Lancet* 1988; 1, 550-554
8. Khuroo MS, Teli MR, Skidmore S, Sofi MA and Khuroo MI, Incidence of severity of viral hepatitis in pregnancy. *Am J Med* 1981; 70, 252-255
9. Malik IA, Anwar CM, Ahmad A, Luqman M, Sarfaraz T and Qamar MA. The pattern of acute viral hepatitis in children: A study based on seroepidemiology and biochemical profile. *JAMA* 1987B; 37(12) 314-317
10. Tandon BN, Gandhi BM, Joshi YK, Irshad M and Gupta H. Hepatitis virus non N, non B: the cause of a major public health problem in India. *bull WHO* 1985; 63(5), 931-934
11. Sreenivasan MA, Arankalle VA, Sehgal A and Pavri KM. Non A, non B epidemic hepatitis: Visualization of virus-like particles in the stool by immune electron microscopy. *J Gen Virol* 1984; 65, 1005-1007.
12. Ticehurst J, Popkin TJ, Bryan JP, Innis BL, Duncan JF, Ahmad A, Iqbal M, Malik I, Kapikian AZ, Legters LJ and Purcell RH. Association of hepatitis E virus with an outbreak of hepatitis in Pakistan: serologic responses and pattern of virus excretion. *J Med Virol* 1992; 36, 84-92
13. Zhuang H. Hepatitis E and strategies for its control: Viral hepatitis in China: Problems and Control Strategies. *Monogr Virol*, Basel Karger 1992, 19, 126-139.
14. Hillis A, Shrestha SM and Saha NK. An epidemic of infectious hepatitis in Kathmandu valley. *J Nepal Med Assoc* 1973; 11, 145-151