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TRAFFIC HEALTH HAZARDS

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Summary

Traffic health hazards have increased manifold in Lahore during last two decades due to constant increase in number of vehicles, broken roads, pollution, traffic jams, neglecting of traffic rules, etc. A cross-sectional survey was conducted to collect data pertaining to only three (3) traffic health hazards, among motorcyclists of Lahore, Pakistan. 500 motorcyclists (aged 35-50 years, driving motorcycle for more than 10 years) were interviewed (250 using helmet and 250 not using helmets while driving). 39 motorcyclists experienced accident, 21-(53.85%) wearing helmet while 18-(46.15%) not wearing helmet while driving (Odd Ratio is 0.85). 66 motorcyclists experienced respiratory tract complaints, 17-(25.76%) wearing and 49-(74.24%) not wearing helmet. Odd Ratio is 3.34; showing 3.34 times more risk among non-users of helmet. 146 motorcyclists had eye complaint 31-(21.23%) in motorcyclists wearing and 115-(78.77%) among not wearing helmet. Odd Ratio is 6.02; i.e. 6.02 times higher risk among non-users of helmet. The study concluded that risk of having eye as well as respiratory tract complaints among motorcyclists not wearing helmet while driving was more than the others using helmet. Whereas risk of having met with the accidents is same in both the groups.

Introduction

As the tide of major communicable diseases recede in many countries of the world, Traffic Health Hazards as a whole are making increasing sum total of morbidity and mortality in many parts of the world particularly in the third world countries[1]. Rapid increase in the number of vehicles during last decade is very hazardous to human beings. Developed as well as underdeveloped countries are facing serious health problems. In Pakistan like other developing countries there has been a rapid increase in industrialization, mechanized agriculture and urbanization, leading to great mobilization resulting in *"traffic explosion on the roads"*. The roads have not been developed to such extent as to coup with this increase in traffic; the result is traffic hazards. "These problems are more prevalent in developing countries. Reason being the large number of pedestrians and animals share the roadways with fast moving vehicles, large number of old and poorly maintained vehicles, increasing number of motorcycles, scooters, overloaded buses, widespread disregard of traffic rules, road encroachments, defective roads, poor street lighting, defective lay-out of crossroads, speed-breakers and unusual behavior of the people towards use of vehicles"[2]. *Movement of people and vehicles in a street / road is called TRAFFIC.* The state of health of a receptor has been obviously a highly important variable. The so-called *'normal'* man has been exceedingly resistant to environmental insult and readily adapts to marked changes in atmospheric conditions. But the sensitive individuals or one weakened by disease, exposure or a variety of stresses may be effected markedly by concentration of atmospheric pollutants that would be unnoticed by the normal healthy individual[3]. Health hazards caused by the traffic are *1. Road Traffic Accidents, 2. Pollution of Air along the Roads, 3. Noise Pollution and 4. Road Stress.*

Lahore some fifty years back was known as a city-of-gardens and educational centre in Punjab has to a great extent maintained its tradition so far as education is concerned but alas beautiful gardens around the walled city and the water channel running along have been devastated

mercilessly. The removal of gardens has not only deprived the inhabitants of the scenic beauty they provided but also of the hygienic atmosphere and the evening cool breeze. The city of Lahore is expanding constantly and there is influx of population from outside the city leading to extra burden on the civic facilities. "Every year more than 150,000 vehicles are registered adding extra pressure on the city roads".

Number of Vehicles on Road by Type and District in Lahore Division (As on 30th June 1995)

No.	Division	Motorcars Jeeps and Station wagons	Motor-cycles and Scootors	Trucks	Delivery Vans	Buses	Taxies	Auto Rickshaws	Others	Total
1.	Kasur	1368	5171	188	43	137	-	-	16528	23435
2.	Lahore	100179	218058	3739	12031	1983	1489	6321	136367	480167
3.	Okara	2059	8289	725	68	320	-	-	9633	21094
4.	Sheikhupura	1783	8737	1050	141	280	-	-	30829	42820
	Lahore Div.	105389	240255	5702	12283	2720	1489	6321	193357	567516

Source: *Director General, Excise and Taxation, Punjab, Lahore*[4].

1. Road Traffic Accidents

An accident can be defined as "an unpremeditated event resulting in recognisable injury"[5]. If there is even a tendency for people to consider a disease fatalisticaly it is most apt to be in relation to accident[6]. All other epidemics throughout history have been due to the onslaught of agencies external to man, mainly protoza, bacteria and viruses but road accidents are caused by man himself. A terrible penalty or mortality has already been paid as the cost of integrating the motor vehicle into modern life. "Accidents are 3rd in order among leading causes of deaths in the world and are responsible for 10% of all the deaths in developed countries. There are almost 300,000 deaths from road accidents annually in the world and the total casualities number upto 10 millions[7]. The death toll is 8 / 1000 vehicles in developing countries as compared to 1 / 1000 in industrialised countries"[8].

Traffic Accidents and Casualities in Lahore Division (As on 31st December 1995).

Item	Lahore Division	Kasur	Lahore	Okara	Sheikhupura
Accidents-Total	1396	198	690	136	372
(i) Fatal	600	111	231	74	184
(ii) Non-Fatal	796	87	459	62	188
Casualities Persons-Total	2385	301	844	326	934
(i) Killed	811	119	261	165	266
(ii) Injured	1574	182	583	161	668

Source: *Deputy Inspector General of Police, Traffic, Punjab, Lahore*[9].

2. Air Pollution of Road Enviornment

Sources of pollution

(a) *Transportation Source.* Air pollution due to automobile exhaust is creating adverse problems in developing countries like Pakistan. The basic root-cause is the population over growth because the demands per person are increasing to an alarming rate. A large number of automobiles are added every year to overcome the increasing conveyance problem. On the other hand, a balatant disregard to vehicle maintenance is an other problem due to which heavy smoke is released into the atmosphere continuously. As a result dangerous air pollution problems are increasing without being noticed by authorities and the citizens. In Lahore instead of large / capacious public transport a great number of minibuses are plied as a means of public transport which has led to excessive burden on traffic and more automobile exhaust. The automobile exhaust as on 30th June 1994 was emitted by 339973 vehicles and increased to 480,167 vehicles in Lahore on 30th June 1995 (44.18% increase), which must have increased by the end of 30th June 1998. The Enviornment Protecting Agency, Punjab in a study indicated that motor vehicles are the major source of pollutants like CO, particulate matters, noise and lead. Spark ignited internal combustion engines using petrol as a fuel are by far the most important pollutant[10].

(b) Other Sources. Wind blown dust, flyash, suspended particulates, dried animal waste and smoke are adding to already available transportation exhaust. Average dust fall in Lahore during the year 1993 was 44 tonnes per sq. km per month[11].

Effect Of Air Pollution On Human Beings

- *Obnoxious odours and personal discomfort* are caused by diesel exhaust burning of waste along the road-side, exhaust from two-stroke engines and rickshaws containing unburnt engine oil. The above stated exhaust/smoke does not cause any obvious damage but is very obnoxious to the mucous membranes of the nose and eye (conjunctiva). This causes eye irritation and lacrimation. Individuals with pre-existing conditions of asthma, bronchitis and sinusitis are more effected than others.

- *Health Hazards.* The effect on human being can be short-term and long-term, depending upon the dose and exposure time.The short-term effects of air pollution includes interference with the normal body functions. Exposure to Carbon Monoxide (CO) impair lung ventilation and reduction in visual acuity or an increase in reaction time. Sulphur Dioxide (SO_2) on the other hand causes increased airway resistance and partial ciliary paralysis. These reactions to CO and SO_2 are reversable if the exposure is short-termed. The long-term have been considered to cause several chronic respiratory diseases or aggravate pre-existing conditions like bronchitis, asthma, emphysema, and lung cancer.

- *Annoyance to the Senses:* Include a multitude of reactions such as eye, nose and throat irritation and odours the irritation caused by atmospheric reaction. The photochemical reaction between certain organic materials and Nitrogen dioxide (NO_2) chiefly from automobile exhaust is considered to be responsible for the high incidence of the eye irritation. Effect of air pollution on nose and throat is similar to that of eye.

Specific health effects of air pollution attributed to traffic are:

(a) *Upper respiratory tract;* chronic rhinitis, chronic pharyngitis and sinusitis are the result of long term exposure to the road environment / pollution.

(b) *Lower respiratory tract;* sufficiently high concentration of SO_2, NO_2, suspended particulate matter (SPM) and photochemical smog aggravate bronchitis, asthma and emphysema.

(c) *Cardiovascular diseases;* Any pollutant placing sufficient stress on the pulmonary ventilation / function may effect the heart. CO in sufficient amount can put added stress on those suffering from pulmonary disease.

(d) Photochemical smog and suspended particulate (SPM) cause irritation to eyes and long-term exposure to dust and other traffic pollutants can lead to chronic hyperemia, allergic conjunctivitis and pterygium.

(e) *Carbon monoxide.* Death can take place in human beings, exposed to concentrations of around 1000 ppm, corresponding to blood levels of 60% (Carboxy Heamoglobin) COHb. Impaired functions occurred at much lower blood level, between 10% and 20% COHb, and has been reported by some workers for levels as low as 2% COHb. Actual levels for urban dwellers in moderate to highly polluted cities have found to vary from 0.8% to 3.7% COHb for non-smokers, to 1.2% to 9% for smokers. Smokers are therefore, more likely to suffer impairment of functions than non-smokers[12]. CO concentration in the range of 8-30 ppm has been recorded in Lahore. A Carbon monoxide concentration of 10-15 ppm results in 2.5% COHb over 8 hour's exposure whereas 30 ppm corresponds to 5% COHb[13].

(f) *Lead* is the most prevalent heavy metal pollutant in the atmosphere. This lead comes from automobile exhaust. Automobile originated lead has been associated with particles in respirable range (one micro millimeter in diameter). These lead particulates reach the alveoli and are absorbed. As the level of lead is slowly increasing in the body during long term exposure to polluted air the acute symptoms are not usually found. There is increasing evidence that children with high lead level have restricted mental development and higher incidence of behavior disorders. This is attributed to the irreversible inhibition of growth of nervous system of young children by lead. In Pakistan there are two types of petroleum distillates: Super and Regular. Super contains 0.63-gram lead per liter while 0.42-gram of lead is added in one liter of regular petrol. The use of super petrol accounted for over 58% of the total petrol consumed in Pakistan during 1992-93. Over 900 metric tons of lead (in the form of tetra ethyl lead) was added in gasoline to increase its octane number during that period[14]. Air born lead concentrations were well above the WHO guidelines among 18 major cities of the world including Karachi and Cairo. Presently these two cities have the highest concentration of lead.WHO in 1987 recommended that lead in ambient air should not exceed the range of 0.5-1.0 microgram per cubic meter so that the blood lead level of the general population is maintained below 0.2 microgram / ml. This value is regarded as the lowest-adverse-effect-level[16].

Airborn Lead level in World's Major Cities

Lead level	Cities
Serious	airo, Karachi.
Slighly above WHO gideline	angkok, Djakarta, Manila, Mexicocity.
BelowWHO guideine	eijing, Bombay, Buenos Aires, alcutta, Delhi, London, Los ngeles, Moscow, New York, Rio de aneiro, San Paulo, Soeul

ource: *UNEP / WHO 1992*[15]

. Noise Pollution

Noise is a necessary by-product of the peration of transportation vehicles. Automobile enerates noise from the source such as engine, he tires and the gearbox. "Loudness which is the ubjective magnitude of sound, is normally onsidered to double with an increase in sound ntensity of 10 dB. Sound is only rarely constant ver time, and time is found to effect noise impact n several ways; the length or duration of time, umber of times the sound is repeated and the ime of day at which noise occurs[17].

Heavy vehicles / trailers are responsible for ncreasing background noise level in the cities." he noise emitted by *three wheeler rickshaws* is so igh (in Karachi) that they dominate the noisevel of heavy vehicles. Noise level during 6.00.M. to10.00 P.M. during July 1992 recorded at Mozang Chawk, Assembly Hall, Yateem Khana Chawk, Bhatti Gate Chawk and Railway Station ranged from 65-99 dB[18].

4. Road Stress

Feeling of anxieties and depression are most commonly observed when a person is travelling in high volume of traffic. Indirectly these feelings affect various metabolic processes of human beings like indigestion, unhappiness, blood pressure and headache. Noise due to traffic also causes hypertension and headache. Nerve shattering noise, visual distraction and uncontrolled traffic unusual behavior of personnel using vehicles (animal driven, motorcyclist, motor vehicles, bicycles and as well as pedestrians) leads to annoyance reaction. "Stress exists when the adaptability of the individual is overwhelmed by event"[19].

Material and Method

Present study is a cross-sectional survey conducted to collect data pertaining to health hazards (eye problems, respiratory tract problems and accidents) among motorcyclists of Lahore, Pakistan. 500 motorcyclists had been interviewed by trained personnel at different motorcycle stands (Punjab University, District Courts, Civil Courts, near Bhati Gate and Railway Station). It took one month to get the proforma filled. Sampling unit in the entire motorcyclist aged 35-50 years, driving motorcycle for more than ten (10) years. Snowball type sampling was considered feasible as the sampling units were constantly entering in the study till the size was attained (i.e., 250 motorcyclists wearing helmet with vizier and 250 not wearing helmet while driving). All the persons were interviewed to inquire about eye problems, respiratory tract problems and accidents, faced during last calendar year (January 1997 December 1997). Deep wounds and fractures to motorcyclists and repairable damage to motorcycles were ranked as major accidents, whereas others were ranked as minor accidents. Major complaints were only considered and minor were ignored, if minor complaints are included the results could be even different. For statistical purpose two groups were made:

G-I Motorcyclists wearing helmet with vizier,

G-II Motorcyclists not wearing.

Results / Statistical Analysis

Table 1 *Health Hazards Among Motorcyclists During 1st January 1997-31st December 1997*

Health Hazards	Using Helmets	Not Using Helmets	Total	Grand Total
Accidents				
Major	3	4	7	
Minor	18	14	32	39
Respiratory				
Upper Tract	11	32	43	
Lower Tract	6	17	23	66
Eye Complaints				
Chronic Conjunctivitis	22	84	106	
Allergic Conjunctivitis	9	31	40	146
Mixed Complaints	17	29	46	46
No Complaint	181	68	249	249
Total	250	250	500	500

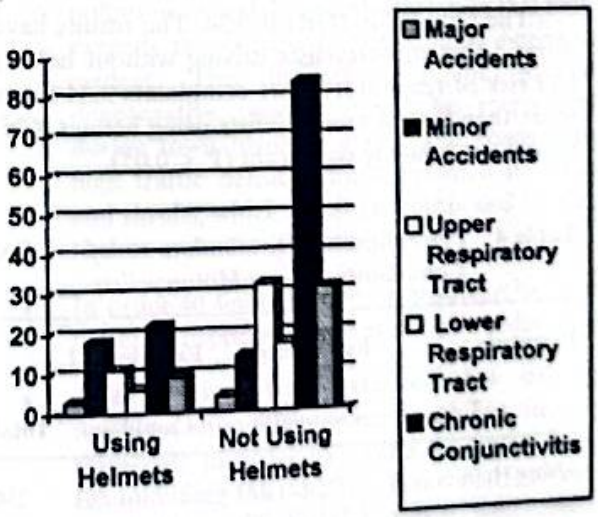

Fig 1 Bar chart showing distribution of Traffic Health Problems among 500 motorcyclists.

Table 2 *Percentage Distribution of Accidents among Motorcyclists*

Personals	Experienced Accident	Experienced No Accident	Total
Using Helmet	21 (53.85)	229 (49.67)	250
Not Using Helmet	18 (46.15)	232 (50.33)	250
Total	39 (100.00)	461 (100.00)	500

(Figures in parenthesis are percentages)

The Odd Ratio (OR) is 0.85. Motorcyclists not using helmet have shown a risk of having met accident 0.85 time more than motorcyclists using helmet. *Chi-square test* is non-significant P <0.05.

Table 3 *Percentage Distribution of Respiratory Tract Complaints among Motorcyclists*

Personals	Experienced Complaint	Experienced No Complaint	Total
Using Helmet	17 (25.76)	233 (53.69)	250
Not Using Helmet	49 (74.24)	201 (46.31)	250
Total	66 (100.00)	434 (100.00)	500

(Figures in parenthesis are percentages)

The Odd Ratio (OR) is 3.34. The results have showed that motorcyclists driving without helmet had risk of respiratory tract complaints 3.34 times more than that of motorcyclists using helmet. *Chi-square test* is highly significant (P < 0.05).

Table 4 *Percentage Distribution of Eye Complaints Among Motorcyclists*

Personals	Experienced Eye Complaint	Experienced No Eye Complaint	Total
Using Helmet	31 (21.23)	219 (61.86)	250
Not Using Helmet	115 (78.77)	135 (38.14)	250
Total	146 (100.00)	354 (100.00)	500

(Figures in parenthesis are percentages)

The Odd Ratio (OR) is 6.02. The results have showed that motorcyclists not wearing helmet had risk of Eye complaints 6.02 times higher than those wearing helmet while driving. *Chi-square test* is highly significant (P < 0.05).

Discussion

With the increasing population of Lahore the traffic size has also increased manifold during last two decades. The roads are in very bad shape causing undue wear and tear of the vehicles. There is no dearth of dust and other dried wastes along the roadside. Animal driven transports rickshaws, old badly maintained vehicles and two-stroke engine vehicles are pouring their discharge constantly in the atmosphere of the city. Minibuses and wagons are a menace to health and have become threat to the life of the citizen.

The present study was designed to find out the three health hazards; viz. Accidents, respiratory tract complaints and eye complaints among motorcyclists wearing helmet while driving and not wearing helmet while driving. 500 persons driving motorcycles (with or without helmet) were interviewed with at least 10 years of experience as a motorcyclist. Persons meeting with fatal accidents could not be questioned because of their non-availability. The detailed information is tabulated in Table 1. Major accidents were recorded among 4 motorcyclists driving without helmet whereas 3 among those driving with helmet. Minor accidents were 18 among helmet users and 14 among motorcyclist not wearing helmet. Upper respiratory tract infection viz. rhinitis and chronic sore throat, which was observed more, amongst motorcyclists driving without helmet i.e., 32 (74.4%) and 11 (25.6%) amongst those wearing helmet while driving. Lower respiratory tract infection viz. chronic bronchitis and asthma were also high i.e., 17 among non-helmet users and 6 only in helmet users. Only one of them was having family history of Asthma. 115 eye complaints were recorded among motorcyclists driving without helmet (chronic red eye in 84 persons and allergic conjunctivitis in 31persons). Whereas only 31motorcyclists using helmet (22 chronic red eye and 9 allergic conjunctivitis) had eye complaints. The high difference observed among motorcyclists driving without helmet is due to exposure of their eyes directly to air / wind and suspended

particulate in the road atmosphere. It was observed that 53.85%[21] motorcyclist-using helmet met with the accidents and 46.15%[18] among non-helmet users; these results are non-significant as far as accidents are concerned. Statistically it has been observed that 17 (25.76%) motorcyclists experienced respiratory tract complaints driving with helmet whereas 49 (74.24%) motorcyclists not using helmets experienced respiratory tract complaints. 31 (21.23%) eye complaints were observed among motorcyclists using helmet and 115 (78.77%) among non-helmet users. The results amongst motorcyclists driving with and without helmets as regards respiratory tract and eye complaints are more marked and statistically significant.

There are no green belts left along the roadsides. If any, are filled / choked with dust and garbage. In Lahore there is on average 44 tones of dust fall per month per sq. km., recorded in 1993. This dust usually circulates throughout the year with additional dust falling during the following year. This dust along with other suspended particulate increases the pollution in the air causing respiratory problems and eye symptoms.

Recommendations

To reduce the traffic health hazards some stern measures have to be taken. Surveys and research should be conducted or at least suggestions / recommendations of already conducted surveys / research should be taken into consideration and measures are taken according to our geographical needs. Basic data collection can play vital role in assessing the needs and requirements and procedures to be adopted.

- *Safety Education* (must begin with the school children). The drivers should be properly trained in maintenance of the vehicles and safe driving. (There should be a check on the vehicle condition and driving skills). Young people need to be educated regarding risk factors traffic rules and safety precautions. It has been aptly said, "if accident is a disease, education is its vaccine"[20].
- Legislation
- Enforcement of rules / law and
- Engineering services of Lahore Development Authority, Water and Sanitation Agency, Electricity Department, Telecommunication Department and Traffic Engineering and Planning Agency (TEPA) if coordinated can play strong role in preventing Traffic Hazards.

Pollution of the Road Environments

- In order to reduce the emission of motor vehicle exhaust large buses / double decker buses must replace poorly maintained 14 seated minibuses.
- Corrective measures should be adopted to improve the combustion process through improving the engine design, increasing the air fuel ratio or by complete oxidation of exhaust gases before emitted into the atmosphere.
- Particulate matters in the atmosphere are due to automobile exhaust. The particulates in rickshaw smoke are much smaller and harmful. Diesel smoke can be reduced substantially by good maintenance, use of quality fuel and reasonable operating methods. Lead emitted in engine exhaust possesses a serious threat to human health. Having some engine modification as being done in other countries should stop the use of tetra ethyl lead as anti-knocking agent. Adulteration of petrol with kerosene oil etc. has to be properly safeguarded.
- Dust---natural process can take care of air pollution to certain extent. But when this limit exceeds the burden on atmosphere becomes evident. This limitation of the natural degenerative process should be recognized during town planning stage. The roads with high traffic density should be lined by trees and shrubs, which act as bio-filters and barrier to dust and noise pollution[21].
- In order to limit the use of private vehicles a better transport system has to be introduced.
- Animal driven transports and slow moving transport should be replaced with fast moving transports in order to soothe the traffic flow. Smoothening of traffic flow pattern can reduce some particulate like carbon monoxide because freely moving vehicles produce less CO than those which constantly stop and start.
- Improving road design, increasing pavement areas and better solid waste management can

reduce fugitive source of dust and particulate matter[22].

- The Public Awareness Program as stressed by EPA, Punjab, in its report 1993 has not yet been implemented. EPA should be activated with more powers to safe guard the future of next generation.

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LAPAROSCOPIC CHOLECYSTECTOMY: A PROCEDURE OF CHOICE FOR SYMPTOMATIC GALL BLADDER DISEASE: AN EXPERIENCE OF 1100 CASES

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Summary

From January 1992 to December 1997, a total of 1100 laparoscopic cholecystectomies were performed. Average age was 47.63 years while male to female ratio was 1:4.6. Chloecystectomy included cases of relative contraindication as well. Procedure proved successful in obese, hypertensive, intra-abdominal adhesions and acute gall bladder disease. In complicated patients the threshold for convertion was kept low. Overall convertion rate was 2.9%. However it was higher in difficult cases. Mean hospital stay was 1.8 days. There was no mortality. Laparoscopic cholecystectomy is procedure of choice and it is safe even in high risk cases.

Introduction

Since its debut by Robert Mourret in 1987, laparoscopic cholecystomy has emerged as gold standard as regards laparoscopic surgery. Initially there were some absolute and some relative contraindications to laparoscopic cholecystectomy, but with experience and improvement of equipment, there is perhaps no contraindication. However in case of obese, obscure anatomy, adhesions, haemorrhage, damage to common bile duct and acute gall bladder disease, surgeon should have low threshold for convertion to open cholecystectomy[1-3].

Now world wide, laparoscopic cholecystectomy is a procedure of choice in acute gall bladder disease. In future when robotic equipment and better video facilities will come, the procedure will improve further. Even now it is a miracle that laparoscopic cholecystectomy has emerged as a procedure of choice in short span of time[4-6].

Materials and Methods

Over a period of 6 years from January 1992 to December 1997, 1100 laparoscopic cholecystectomies were carried out. All patients had routine investigations, liver function tests and ultrasound of abdomen.

The patients who underwent laparoscopic cholecystectomy, wether, successful or converted were included in study. Those who were unfit for anaesthesia or did not opt for laparoscopic cholecystectomy were excluded. The procedure was carried out by standard four port technique.

Clinical examination, investigations, operative time, postoperative complication, reasons for convertion if converted and hospital stay were recorded on proforma and results were drawn.

Results and Observations

Males were 198 and female were 902. Male to female ratio was 1:4.6. Mean age of patients was 47.63 years ranging from 25 years to 80 years.

There were 254 (23.09%) obese, 153 (13.91%) controlled hypertensives. Anatomical obstacle noted in 80 (7.27%) patients. Adhesions in 104 (9.45%) and acute cholecystitis in 41 (3.73%) patients.

Overall convertion rate was 2.9%. In total of 32 converted cases, causes were slipped clip 4, haemorrhage from falciform ligament 2, severe haemorrhage 2, unclear anatomy 8, bile duct injury 3, intraabdominal adhesion 10, gangrene gall bladder 3. Mean hospital stay was 1.8 days, ranging from 1 day to 10 days.

Table 1 *Age in 1100 Cases*

Age	No. of Patients	Percentage
25-35 years	134	12.18
36-45 years	327	29.73
46-55 years	369	33.55
56-65 years	220	20
66-80 years	50	4.54

Table 2 *Causes of Convertion in 1100 Cases*

Cause	No. of Cases	Percentage
Severe haemorrhage	8	0.73
Unclear anatomy	8	0.73
Bile duct injury	3	0.27
Intra-abdominal adhesions	3	0.27
Total	32	2.90

Table 3 *Duration of Hospital Stay in 1100 Cases*

Duration	No. of Patients	Percentage
1 day	512	46.55
2 days	375	34.09
3 days	118	10.72
4 days	83	7.55
Upto 10 days	12	1.09

Discussion

Laparoscopic cholecystectomy has emerged as gold standard for laparoscopic procedures. The technique is rapidly replacing traditional procedure. It is procedure of choice for symptomatic gall stone disease and on the other hand it saves patient from ugly scar. There is less pain, less hospital stay and thus less burden on hospital resources and saving of working hours[2,5,7]. Initially there were many contra-indications for laparoscopic cholecystectomy but with increasing experience, there is no absolute contraindication. However in difficult cases, surgeon should always maintain low threshold for convertion into open procedure[5,6].

The indication for convertion are uncontrolled bleeding, injury to bile duct, inability to demonstrate the anatomy of region and severe adhesions[7,8].

In our study male to female ratio is 1:4.6. In various studies world wide the ratio varies from 1:3 to 1:11.5[9,10]. However predominance of female is obvious due to obvious reasons. In our study mean age was 47.63% while in literature it ranges from 40.5% to 52%[11,12]. The figures from the areas where early marriage occur, mean age group is low. Our overall convertion rate is 2.9% while literature shows variation from 1.2% to 14% in different studies.[9-13]. Common causes of convertion were unclear anatomy 8 (0.72%) and intra-abdominal adhesion 10 (0.91%). However convertion rate in acute gall bladder disease was higher i.e 3 out of 41 cases (7.32%). In literature convertion rate in acute gall bladder disease has been reported upto 45% also[12,13].

Mean hospital stay in our study is 1.8 days while generally it ranges from 1.5 to 3 days in different series from literature[14,15]. There was no mortality in our series. While in literature, mortality reported ranges from 0% to 1.7%. Devil it al (1993) reports 0.04% mortality rate in 77604 patients from 4292 from different centers[13,14,15].

Therefore we conclude that laparoscopic cholecystectomy is safe procedure. It is becoming cost effective day by day. There is no absolute contra-indication for procedure, however surgeon should have low threshold convertion especially in acute cholecystitis, bile duct injury, obscure anatomy, unmanageable adhesions and severe haemorrhage.

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FITNESS STATUS OF DRINKING WATER SUPPLIED IN DIFFERENT AREAS OF LAHORE (STUDY OF 638 SAMPLES)

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Summary

The present study was carried out to assess the fitness status of water supply based on bacteriological quality of piped water in distribution system and ground water in Lahore. The study comprised of 638 water samples from areas with different socio-economic conditions. There were 587 water samples from piped water in distribution system and 51 from ground water. Out of 587 water samples from distribution system, 60.81% were found positive for total coliform organisms while 29.81% were positive for faecal coliforms. Whereas only one out of 51 ground water samples was found positive for total coliforms with none positive for faecal coliforms. When these results were compared in areas with different socio-economic conditions, significantly higher number of samples were found positive for total coliforms and faecal coliforms ($P < 0.001$) in areas with low socio-economic conditions as compared to areas with intermediate and high socio-economic conditions. It is concluded that the bacterial contamination of piped water is a significant problem in Lahore. It can be improved by regular chlorination of water and monitoring of water supplies for bacterial contamination.

Introduction

It had long been suspected that "Bad" water could cause illness. However, it was not until 1854 when John Snow convincingly linked cholera epidemic in London to consumption of contaminated water. (Jensen and wright 1989). Later on William Budd demonstrated that typhoid fever spreads from faeces of patients via water and food (Dadswell 1990). Since then it is well established that infectious diseases are transmitted primarily through water supplies contaminated with human and animal excreta particularly faeces (Hurst 1991a, WHO 1993).

It is estimated that 1200 million people in developing countries still do not have access to safe water (Napalkov 1992). The gravity of situation could be well imagined from the fact that "over 12,000 children die per day in certain countries from disease caused by water-borne faecal polluants (Gilstrap et al 1983). According to WHO 80% percent of all sickness and disease in the world is caused by inadequate sanitation, polluted water, or unavailability of water (cited by Cheesebrough 1984). Still out breaks of water-borne diseases continue to occur throughout the world, but are especially serious in developing nations (Emde et al 1992). Water-borne infectious diseases are the most common cause of infectious disease in developing countries (Manja et al 1982). According to Castillo et al (1994), approximately 98 percent of infections in Latin America are related to water-borne pathogens. Most recent out break of cholera has killed 12,000 Rwandans in just three weeks (Siddique et al 1995).

According to WHO (1984b), if water contamination is recent, and there are active cases or carriers in community, then some viable, potentially harmful organisms may be present. The use of such water for drinking or for preparing food, contact during washing, and even inhalation of water vapors or aerosols may result in infection (Blatchley and Isaac 1992, WHO 1993).

Contamination of drinking water may introduce a variety of saprophytic and pathogenic organisms (Gilstrap et al 1990). The pathogens include

bacteria, viruses, and parasites (WHO) 1985, Emde et al 1992, Black and Finch 1993, WHO 1993, Cartwright et al 1993, Cohen and Hoeprich 1994).

Those that present a serious risk of disease whenever present in drinking water include Salmonella species, Shigella species, pathogenic Escherichia coli, Vibrio cholerae, Yersinia enterocolitica, Campylobacter jejuni, and Campylobacter coli, Pseudomonas aeruginosa and Aeromonas species.

The viruses such as Adenoviruses, Enteroviruses, Hepatitis A, Hepatitis E, Norwalk virus and Rotavirus, and the parasites such as Entamoeba histolytica, Giardia species, Cryptosporidium parvum, and Dracunculus medinensis (Geldreich et al 1992a, Emde et al 1992, Joklik et al 1992, WHO 1993). Most of these pathogens are distributed worldwide. Howsoever, outbreaks of cholera and infection by the guinea worm are regional (WHO 1993).

Serious illness can also occur through inhalation of water in which the causative organisms have multiplied because of warm temperature and the presence of nutrients. These include Legionnaires' disease cause by Legionella species.

Schistosomiasis or bilhariziasis is a major water associated parasitic disease of tropical and subtropical regions. This is primarily spread by contact with water during bathing or washing (WHO 1993). The larval stage (cercariae) released by infected aquatic snails penetrates the skin (Samuelson and Lichtengberg 1994).

In Pakistan water microbiology is a neglected subject. It can be assessed by the fact that relatively small data is available. Moreover, the available data too, is in form of studies. Data on routine bacteriological testing of water is not available.

Various studies have been carried out in different areas of Pakistan regarding the bacteriological quality of water supplies. In Swat, Zai and Akhtar (1982) collected water samples from wells (35) taps (30) springs (18) stream (13) and 4 different locations of reivr Swat. They reported that all samples were contaminated with faecal organisms except those from springs. In another study, Khaliq et al (1986) collected 70 water samples from Abbottabad area, and found that 57.2% samples were faecally contaminated. Similarly Akhtar et al (1986) studied water quality in North West frontier Province of Pakistan (NWFP). Samples were collected from Peshawar, Mardan and Swat valley. They reported high level of faecal contamination in water. The present study was carried out to explore the situation in Lahore city regarding drinking water supply.

Materials and Methods

Study Area

Present study was conducted on water supply of Lahore. For this purpose, two types of water samples were studied i.e., piped water in distribution system and ground water. The samples were obtained from different localities of Lahore comprising of areas with high socio-economic conditions as well as intermediate and low socio-economic conditions. Representative samples of piped water in distribution system were obtained from taps in the mosques connected directly with main supply. The water from taps connected with any sort of storage tank was not included in the study. Ground water samples were obtained from hand pumps and other water sources (tube wells and pneumatic pumps). Information regarding serial number of the sample, date of sampling, time of sampling, locality, source of water supply, nature of water supply (continuous or intermittent) and chlorination of samples were obtained and enlarged in proforma entered.

Sampling Procedure *(WHO 1985, Senior 1989)*

Water sampling was carried out in sterilised 300 millilitres capacity screw capped glass bottles according to procedure given by Senior (1989). For water in distribution system any attachment which would cause splashing was removed from tap with clean cloth, outlet was cleaned to remove any dirt.

Tap was opened at maximum flow for 1 to 2 minutes. After closing the tap, it was sterilised by ignited cotton wool swab soaked in spirit for one minute. It was again turned on and water was allowed to flow at medium flow rate for one to two minutes. The sterilised bottle was opened and while holding cap face down, bottle was held under the water jet and filled with swater, leaving a small space for shaking prior to inoculation. After that screw cap was secured in place. The bottle was numbered with permanent waterproof marker relevant to its serial number.

Samples from ground water were obtained similarly, However, hand pumps were pumped for 1-2 minutes followed by sterilisation of water outlet

by ignited swab soaked in spirit for one minute. rest of procedure was similar as for taps water samples.

Transport of Samples

All the samples were transported protected from light and processed in Laboratory within 3 to 4 hours of time of collection which is well under time allowed for transport as given by senior (1989).

Results

The present study was carried out to assess the bacteriological status of piped water in distribution system and ground water in Lahore. For this purpose conventional multiple test tube method was used.

From the purpose of study 638 water samples were tested. Out of these, 587 were from piped water in distribution system and 51 from ground water. Out of 587 water samples from distribution system, 141 were taken from areas with high socio-economic conditions, 228 water samples were from areas with intermediate socio-economic conditions and 218 were from areas with low socio-economic conditions (Table 1).

Table 1 *Number of samples and Chlorination status of piped water in distribution system from areas with different socio-economic conditions*

Socio-economic Conditions	Chlorinated		Un-chlorinated	
	Number	Percent	Number	Percent
High (141)	44	31.21	97	68.79
Intermediate (228)	93	40.79	135	59.21
Low (218)	33	15.14	185	84.86
Total (587)	170	28.96	417	71.04

Result of multiple test tube revealed that out of 587 water samples from distribution system, 357 were positive for presumptive coliforms and total coliforms. However, 175 samples were positive for faecal coliforms. This shows that in all 357 water samples were unfit for drinking as per WHO (1984a) standard. Against that only one sample from ground water was positive for persumptive coliforms and total coliforms (Table 2) with none showing faecal coliforms (Table 3).

Table 2 *Result of total coliform test on water samples from areas with different socio-economic conditions*

Socio-economic Conditions	Samples Positive		Samples Negative	
	Number	Percent	Number	Percent
A High (141)	66	46.81	75	53.19
B Intermediate (228)	126	55.26	102	44.74
C Low (218)	165	75.69	53	24.31
D Grand Water	01	1.9	50	98.1

Figures given in parentheses indicate number of samples in each category

Overall $P < 0.001$ (Highly significant)
A versus B $P < 0.05$ (Not significant)
A versus C $P < 0.001$ (Highly significant)
B versus C $P < 0.001$ (Highly significant)

Table 3 *Result of faecal coliform test on water samples from areas with different socio-economic conditions*

Socio-economic Conditions	Samples Positive		Samples Negative	
	Number	Percent	Number	Percent
A High (141)	25	17.73	116	82.27
B Intermediate (228)	57	25.00	171	75.00
C Low (218)	93	42.66	125	57.34
D Grand Water	-	-	51	100%

Figures given in parentheses indicate number of samples in each category

Overall $P < 0.001$ (Highly significant)
A versus B $P < 0.05$ (Not significant)
A versus C $P < 0.001$ (Highly significant)
B versus C $P < 0.001$ (Highly significant)

Water samples from areas with different socio-economic conditions revealed significant difference ($P < 0.001$) in positivity for presumptive coliforms, total coliforms and faecal coliforms between different areas. However, no significant different ($P > 0.05$) was observed between samples from areas with high socio-economic conditions and intermediate socio-economic conditions.

According to WHO standard (1984a) for drinking water, there should be no coliform organism in 100 ml of chlorine treated water samples. In the present study, water samples have been orbitrarily grouped into three catagories (< 1, 1-3 and 4 > 180) according to total coliforms density i.e., most probable number per 100 ml of water. The samples in the first category (< 1) are considered fit for human consumption while samples in the other two categories are considered unfit.

The results revealed that Escherichia coli (the bacterial indicator of faecal pollution) was isolated from 17.73%, 25% and 42.66% of samples from areas with high socio-economic conditions, intermediate socio-economic conditions and low socio-economic conditions respectively.

Discussion

Today the process of urbanization and industrialization in the world has led to increased demand for pure water supplies (Ahmad 1991). At the same time due to release of demestic and industrial wastes into the environment, both the developed and developing nations face increasing problem for procurement of good quality water (Datka et al 1990).

Pakistan is a developing country and need of providing safe water to urban as well as rural population is much needed. The present study was planned to assess the bacteriological quality of water in Lahore.

Lahore is capital of Punjab and the second largest city of Pakistan. According to survey done in 1981, its population was 2, 707, 215 (Census 1984). It is now estimated to be more than 5 millions.

Based on sanitary conditions and density of population, the people in Lahore are seen to live in different socio-economic conditions i.e., high, intermediate and low. Areas with high socio-economic conditions have better hygienic and sanitary conditions and population is less dense. In areas with intermediate socio-economic conditions sanitary and hygienic conditions are good but not as good as in high socio-economic condition areas. At the same time, these areas have relatively denser population. Whereas in areas with low socio-economic conditions, population is very dense and hygienic conditions are low.

Almost all the population of Lahore is served with piped water supplies using ground water as a source and it is supposed to be treated before it is introduced into the distribution system.

In the present study, a total number of 638 water samples from different areas of Lahore were studied. Out of these 587 were from piped water in distribution system while 51 represented ground water (Table 2). An effort was made to take representative samples from all the areas with different socio-economic conditions.

The water in distribution system in Lahore is supposed to be chlorinated. However testing for the presence of chlorine revealed that only 28.96% samples were actually chlorinated at the time of sampling (Table 1). The chlorination was significantly less ($P < 0.001$) in areas with low socio-economic conditions as compared to areas with high socio-economic conditions and intermediate socio-economic conditions. It is note worthy that even people in areas with high socio-economic conditions were getting unchlorinated water. Lesser percentage of chlorinated water samples observed in high socio-economic areas may be because certain localities like Defense Society and Model Town have their own water supply and they had no chlorine treatment plants at the time of study.

Although claimed by Water and Sanitation Authority (WASA) Lahore, that water supplies are chlorinated round the year, yet testing the water supplies for the presence of chlorine in the present study revealed chlorine in months of July and August only. Whereas in Ajpril, May and June not a single water sample in the present study was chlorinated.

According to WHO standards (1984a), there should be No coliforms / 100 ml of treated water samples in distribution system. In the present study, out of 587 water (60.81%) (Table 2) were unfit for drinking as they were found positive for total coliform organisms by most probable number method. While out of 51 ground water samples, only 1 (1.9%) (Table 2) was found positive for total coliforms. This was near a cesspool (Big open sewerdrain. Thus confirming the findings of Farkhana, the nearer the contamination source the more chance of pollution. Testing for the presence of theremotolerant coliforms (faecal coliforms) revealed that 175 (29.81%) (Table 3) samples from distribution system were positive while none out of

ground water samples was positive. Therefore, ground water in Lahore is highly safe.

According to Allen and Geldreich (975) ground water is usually free from enteric pathogens. According to West and Benton (1993) also, this water is usually of good bacteriological quality. Percolation of water through the soil results in removal of microbial pollution (Geldreich 1986). Remateke et al (1991a) in India have found that 6.9% ground water samples were positive for faecal contamination. This figure is much higher than that of present study. In Pakistan, Shaikh et al (1994) have reported a very high figure of 53.33% positivity in ground water samples from Karachi. They have attributed this to a low depth (9-27 feet) of bored wells and proximity of these sources to main sewer pipe lines (within 10-20 feet). In the present study, the only ground water found positive was also located near a big open sewer drain.

Water in distribution system is contaminated while it passes along the distribution system as shown by high percentage of positivity of piped water for total coliforms and faecal coliforms in the present study. Contamination can occur in distribution system not only due to improper disinfection or filtration process but also due to defective joints, back syphonage, rusted pipelines, crossing over of sewage pipes and low or high pressure in pipelines (Baqai 1988, Geldreich 1992, WHO 1993).

Various researchers have studied the bacteriological quality of water abroad and in Pakistan. Ramteke et al (1991) have reported that 68.9% water samples from rural piped water samples in India were positive for total coliforms by using most probable number method. Kromeredjo and Fujioka (1991) from Indonesia tested chlorinated piped water supplies. They have reported that 45.7% samples were unfit for drinking. This figure is lower than that in the present study. In a study done by Mahfouz et al (1995) in Saudi Arabia, 100% water samples were unfit. They studied well water which is obviously more likely to be contaminated.

In Rawalpindi and Islamabad, many studies have been carried out by different workers. Sami and Rehman (1985) studied piped water supply by most probable number method. They have reported that 52.37% of treated sample were positive for coliforms. This figure is slightly lower that in the present study. In another study, Sami et al (1988) tested various water sources in Islamabad and Rawalpindi and reported that 38% treated water samples were unfit for drinking. This figure is much lower than that in the present study. While a figure of 56.2% positivity in chlorinated water samples have been reported by Karamat et al (1993). All these studies in Rawalpindi and Islamabad show that bacteriological contamination is a significant problem there.

The results of the present study are in line with the results of previous studies and reveals that contamination of water supplies is a significant problem in Lahore and situation is as alarming as any where else in Pakistan or in other Asian countries. Thus strongly recommending the proper chlorination of piped water supply and proper surveillance.

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A REVIEW

EFFECTS OF UNCHECKED USE OF PESTICIDES AND FERTILIZERS

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Summary

Uncontrolled population growth needs more food production as well as storage. But microorganisms or weeds try to damage these stores. To prevent these damages pesticides are used in modern days. It is reported that Pakistan has imported 3404 tons of pesticides in 1977 which raised to more than 5000 tons now. 90% of these were used in agricultural fields and 10% in household. A craze has been developing in Pakistan for using mosquito repellent coils and mats, use of DDT as anti-lice measures. All the chemicals used as pesticides are poisonous leading to environmental pollution, at times with residual effects, particularly in vegetables and fruits, and causing intoxication to the consumers if not washed properly. Untrained staff, absence of proper protective equipment had also lead to the mishaps in the spray staff. Unfortunately Pakistan has no laboratory facilities for preparing or checking the efficacy of these pesticides. And surprisingly major part of these imports were unspecified and moreover some of the products were banned for use in their country of origin and were only prepared for export purposes. Similarly fertilizers are also used untimely without any expert opinion, just on the basis of the advertisements. This whole process is causing intoxication even leading to deaths. To put a check on such intoxication research and training institutes should be established. Import of unspecified pesticides should be stopped. No pesticide, which is banned in country of manufacturing, should be imported. Health education be imparted to the community for preventive and control measures against pesticide intoxication.

Introduction

Rapid population growth along with accelerated urbanization is a major problem of 3rd world, of which Pakistan is also a part.

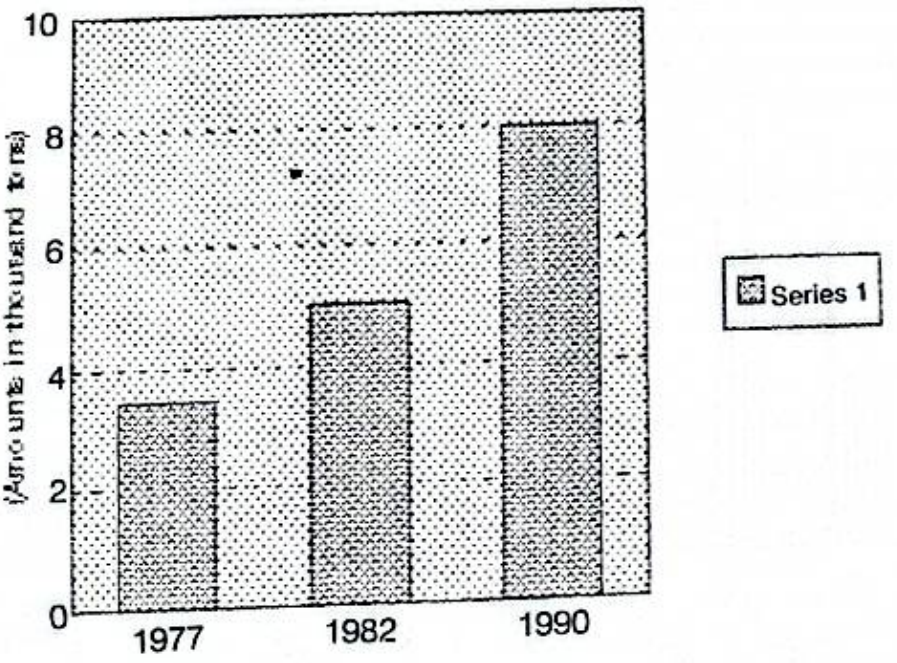
More food is required for this increased population. Food production in Pakistan has increased rapidly in recent decades but cannot keep up with increase in population. Since further expansion of land is often not possible. Efforts have to be directed towards increasing yields. (Ilyas 1993)

But food and Fiber may be damaged by insects, micro-organisms or weeds during every stage of their production and storage. Where as presently agricultural produce worth Rs. 25,000-30,000 million is lost in Pakistan due to pests and disease. (Akbar S 1990)

To prevent such damage pesticides are used in modern days. Pakistan being a developing agricultural country is also facing the same problems and has started the use of insecticides and pesticides, not only in agricultural fields but also in households.

Akbar S (1990) has estimated that Pakistan imported 3404 tons of Pesticides in 1977 which was raised to 5000 tons in 1982. In 1990 Ahmed said that the use of pesticides in Pakistan has reached the figure of 8000 tons.(Fig. 1)

Out of these imported pesticides 90 percent were used in agriculture and 10 percent were used in households. All the chemicals used as insecticide or pesticide have the potential to cause environmental pollution due to continuous exchange between soil, water, air and living



Amounts of Pesticide Consumed in Pakistan

organisms. Most of the pesticides were deadly poison and their residues persist in environment. Organo chlorines are more persistent and accumulate in body fat.

A craze has developing in Pakistan for using mosquito repellent coils and mats. Rs. 28.24 million and Rs. 84000 were spent on coils and mats respectively in 1989-90. The smoke and vapors produced by the burning of these coils and mats were inhaled and were finally degraded by the liver enzymes, thus exposing liver to their toxic effects.

Another misuse of Pesticides in Pakistan was the application of DDT as an anti-lice measure which results in cases of DDT intoxication. Generally the toxic effects of pesticides appear as nausea, headache, vomiting, fatigue/weakness, muscular convulsions, coma, and may be death.

Residues of Pesticides

Excessive use of pesticides has resulted in deposition of these chemicals in grains, fruits, vegetables, in animals through ingestion of such food, water and also from respiratory and dermal exposure, and in turn residual presence in meat and dairy products.

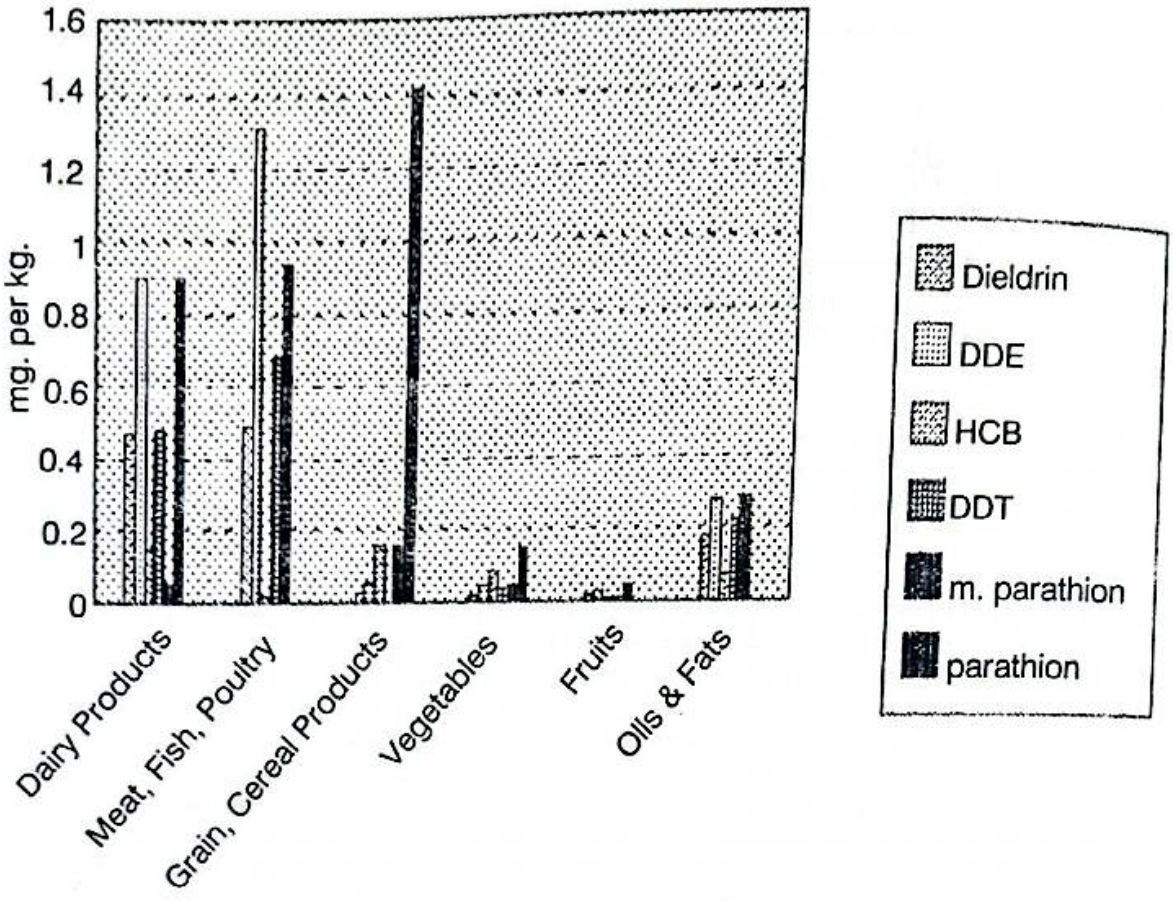
A study conducted by Akbar S (1990) in Karachi showed that the adipose tissue of man contained DDT-25 ppm; BHC-0.48; and Dieldrin-0.47. Spray residues of pesticides were also observed e.g. DDT-residues on cotton seed; Endrin-residues in vegetables even 21 days after spraying in Faisalabad. Malathion residues on cabbage (7.4 ppm) were seen 6 days after the spray; DDT residue were found in ice melted at Anthracite; and DDT accumulation was found in fish.

In another study conducted by NIH Islamabad in 1984 it was shown that organo chlorine pesticide residue (DDT) were most frequently found. Among organophosphorous pesticide residues methyl parathion was the most prevalent (93.7 percent). Malathion and Diazinon were found but in low amounts. (Fig. 2).

Hazards of Overdosage of Pesticides

According to WHO 2 million people suffer from pesticide poisoning and some 40,000 die every year (Akbar 1990).

Surprisingly, of the large amounts of pesticides applied to the environment to control about 2000 pests, only about 1% reaches the target. When applied by aircraft as little as 20-25% of the formulation ever land on the crop area. Some pesticides have adversely affected the plants and animals of the locality. Depression of sperm counts



Residual Pesticides in Major Food Groups

among agricultural workers exposed to pesticides have been reported. Death incidence rates were quite common while among the survivors, dermatitis and skin cancer developed. There were association between high serum organochlorine pesticides and subsequent appearance of hypertension, chardio vascular disease and possibly diabetes. (Akbar S 1990)

Some of the organophosphorous compounds can also penetrate deep in to vascular system of plant to kill off the bugs deep inside the fruit but it also make the simple washing useless. If vegetables having residues of pesticidal spray were consumed without proper washing, then there was a strong possibility of intoxication. Two family members of a doctor developed abdominal cramps and diarrhoea. Laboratory failed to show any pathological organism. After detailed investigations it came out that those two members had taken turnips which were sprayed with Furadon (Masood 1990).

Lack of Quality Check

Beg (1992) had pointed out that Pakistan unfortunately neither had the ability to prepare any pesticidal chemical nor had the ability to check the efficacy and toxicity of any imported chemical or pesticides. This was the reason that out of an import of pesticides worth Rs. 3.048 billion, a part worth Rs. 1,043 billion were unspecified and no one knew how toxic and efficient those unspecified pesticides would be. Certain developed countries were exporting such chemical/pesticides which were banned in their own country e.g. 40 percent of USA production in this field was for export purposes only and 15 percent of those pesticides were not even registered in USA.

Beg (1992) further reported that due to the lack of ability to check the efficacy and toxicity of a particular pesticide Pakistan suffered a mishap in 1976. It was thought that due to excessive spraying with DDT during Malaria Eradication Programme

Resistance was being developed in mosquitos. So a new pesticide named Malathion was imported and spraying started without any proper training or education to staff, as well as population under spray. Ultimate toll was 7 deaths and 2100 cases of acute intoxication, particularly in Kohat and Faisalabad. After detailed investigation by many local and international agencies it was concluded that toxicity was due to an impurity naming isomalathion which was 800 times more toxic than Malathion.

Crux of the problem was that most of the staff dealing with pesticides did not know the toxicity of the chemicals and its control or remedial measures. It was not surprising that while developing countries account for only one sixth of pesticides used, poisoning rate was 13 times as high as USA. It was often seen that new Agro Service Firms were taking contracts to make the building termite proof, but their workers themselves donot know the exact combination of chemicals which they were using nor take any preventive measures for its toxicity.

Contamination by Fertilizers

Contamination of food was also taking place in another way i.e. by untimely and improper use of fertilizers, which may accumulate in the seed. As the fertilizers were rich in Nitrogenous compound so high concentration of Nitrite and Nitrates accumulate in the crop. Shah (1988) conducted a study to see the effects of Fertilizers on crop. A total of 140 samples of wheat and wheat flour were taken from Punjab and were analyzed for Nitrates (No.3) and Nitrites (No.3).

A range of 14.6 ppm to 343 ppm was observed for Nitrate in wheat. Nitrite content in wheat remained very small. In wheat flour the Nitrate contents were 82.2 ppm to 478.9 ppm.

People in Pakistan take most of the calorie and protein requirements from wheat and wheat flour. It was estimated by Shah (1988) that about 104-239 mg of Nitrate were being consumed daily by an adult. And certainly increased level of nitrogenous materials in the body has its consequences.

Conclusions

1. Excessive and uncontrolled use of pesticides was producing its toxic effects.
2. There was misuse of pesticides which was further dangerous.
3. Use of unspecified pesticides was very dangerous because it was difficult to control the toxicity of an unspecified chemical.
4. Use of pesticides which had spent their shelf-life, was dangerous because it only produced toxicity.
5. Most of the users did not know the exact dosage and proper technique to apply the pesticide.
6. There was no proper agency to check the business of pesticides.
7. Practically no safe pesticide was available in the market.

Recommendations

1. Establish a Research and Training Institute for the use of pesticides.
2. EPA should check the samples of imported as well as locally manufactured pesticides for their shelf life, toxicity, and specification.
3. The afforestation on a mass scale has to be carried out. It has multifaceted advantages for environmental protection.
4. No programme can succeed unless the public owns it and considers it as its felt need. For this purpose the programme of public education and awareness on all aspects of environmental protection should be strengthened. Environmental protection may be taken in a comprehensive sense including family planning, planning of migration, planning of settlements and then the provision, utilization, and maintenance of utilities.

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OMENTUM AS INTERPOSITION TISSUE IN REPAIR OF VESICOVAGINAL FISTULA: A STUDY OF 9 CASES OF V.V.F. REPAIR AT NAWAZ SHARIF SOCIAL SECURITY HOSPITAL, LAHORE

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Summary

Vesicovaginal fistula is sequlae of obstructed labour, hysterectomy, C-section, neoplastic invasion and pelvic irradiation. In developing countries unattended obstructed labour is common cause. From Jan. 1992 to Dec. 1997, 9 patients of VVF were operated at Nawaz Sharif Social Security Hospital, Lahore. Mean age was 45.55% while common cause was obstructed liver in 66.67% cases. Mean hospital stay was 25.5 days. All operations were carried out by transabdominal, transperitoneal approach. Greater omentum was used as interposition tissue in between repair of vagina and bladder. In follow up of 6 months to 4 years, no recurrence reported.

Introduction

Vesicovaginal fistula is a curse for females, keeping them wet all the time. It is common in developing countries, especially in rural areas where the skilled antenatal and intrapartum care is still lacking[1].

Vesicovaginal fistula is commonly a sequale of obstructed labour causing pressure necrosis and obstetric injury. Other causes include hysterectomy, C-section, cystocele repair, neoplastic invasion, pelvic irradiation and rarely coital injuries[1,2].

First successful repair of vesicovaginal fistula was done by Sim's in 1847 by vaginal approach. Since then several surgical techniques has been tried for VVF repair but still results are uncertain. Broadly, prognosis depends upon aetiology, site, size of fistula and also its proximity to bladder neck, the fixity, extent of devitalization and failed attempts. Small vesicovaginal fistulae just heal spontaneously by bladder drainage and cautry[1,2].

Vesicovaginal fistula may be repaired by simple excision of tract and simple closure of bladder and vagina. But recurrence and failure is common. Interposition of vascularized tissue between bladder and vagina give better results. Various tissues used for interposition include, skin graft[3] gracilis muscle[4], bulbocavernous, myocutaneous flaps and omentum[5].

Materials tried for suture and repair of VVF include absorbable sutures, non-absorbable sutures, freeze dried dura mater, fibrin glue and a new biodegradable membrane[6].

Transabdominal approach for VVF repair with omentum for interposition has proved a successful technique with good results for high vesicovaginal fistula[7].

Materials and Methods

From Jan. 1992 to Dec. 1997, over a period of 5 years, 9 patients were operated at Department of Gynae and Obs, Nawaz Sharif Social Security Hospital, Lahore for repair of high VVF.

The patients only with high VVF were included study. All patients underwent clinical examination, per vaginal examination, routine investigations of CBC, Blood sugar, Urine examination, Urine C/S, ECG and X-ray chest. IVP was done in all cases. Then fistula was assessed by EUA and size noted.

Surgical Technique

General anaesthesia was given in supine position. After cleaning and draping, pffanenstiel incision was made to approach fistula transperitonealy.

A sagittal incision was made in bladder in posterior wall just above fistula. Ureteric orifices were identified and catheterized with 5F ureteric catheters. Then sagittal incision was enlarged as racket incision around fistula. Bladder and vagina were separated by blunt and sharp dissection. The edges of defect in vagina and bladder were freshened. Bladder closed in two layers, first layer of catgut 2/0 continuous, avoiding to pierce mucosa. Second layer of vicryl 2/0 interrupted sutured placed. Vagina was closed by interrupted suture vicryl 2/0 in two layers. Omentum was mobilized and tucked in between two.

Size 16F foly's passed and kept for 3 weeks with 5cc water in balloon postoperatively. We preferred to keep patient on Clafron 1G BD for 5 days and Flagyl 500mg I/V TDS three shorts only. Then patient was kept on Tarivid x BD for further two weeks. Frequent urine C/S was done. On discharge patient were advised to avoid coitus for six months.

Results

Mean age of patients was 45.55% ranging from 25 years to 73 years. The cause of fistula was obstructed labour in 6 patients, hysterectomy in 2 and C-section in 1. All patients belonged to low socioeconomic class.

All patients were re-examined every three months. Follow up of 6 months has been done to all. Five patients lost compliance to follow up after 1 year.

In follow up ranging from, 6 months to 4 years, no recurrence has been reported. Average postoperative hospital stay is 25.5 days ranging from 20-38 days.

Table 1 *Age of Patients Percentage*

Age in years	No. of Patients	Percentage
21-30	1	11.11
31-40	2	22.22
41-50	3	33.33
51-60	2	22.22
61 - ±	1	11.11

Table 2 *Aetiology of VVF in 9 Cases*

Cause	No. of Patients	Percentage
Obstructed labour	6	66.67
Hysterectomy	2	22.22
C-section	1	11.11

Table 3 *Hospital Stay*

No. of Days	No. of Patients	Percentage
Up to 20 days	3	33.33
21-30 days	4	44.45
31-40 days	2	22.22

Discussion

Using transabdominal approach, interposing greater omentum in repair of VVF has been used by many authors successfully[7,8].

In literature, success rate of VVF is 70-90% by transvaginal approach while 70-100% in transabdominal approach[9]. Sheikh et al (1994) has shown 93% success rate by this route[10]. Our success rate is 100%. Reason may be that VVF was done at least after 6 months of its presentation and any infection present was controlled by C/S. This allowed local settling of inflammation and removal of sloughing tissue, so that at time of repair, tissue was in good condition and good vascularity. Postoperative bladder drainage was kept for 3 weeks[5,6,11].

In out study, average age of patients is less than that in literature. This is perhaps due to early marriages in low socioeconomic class, as most of the cases are due to obstetric injuries.

Our average hospital stay is equivalent that reported in literature.

Thus we conclude that repair of VVF by transabdominal route with interposition of greater omentum is safe technique with ideal results and less morbidity.

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ROLE OF FAMILY TYPE (NUCLEAR / EXTENDED) IN FORMULATION OF NUTRITIONAL BELIEFS AND PRACTICES IN PREGNANT / LACTATING MOTHERS IN A RURAL COMMUNITY

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Summary

Effect of type of family on nutritional belief and practice in 50 pregnant and 50 lactating mothers were assessed in a rural area of Lahore. A pretested questionnaire was used for this purpose. Majority (65%) of these mothers were living in nuclear families. Most (90-92%) of these mothers showed a knowledge for increased intake in these stress periods and almost the same number has practiced this knowledge by adding some food items or increasing the amount of some foods. Simultaneously some avoidances are also practiced but by lesser number of mothers with similar ratio of nuclear and extended mothers. 40-47% of mothers were using their own knowledge, 6-10% on husband's 28-30% on mother's and 17-20% on mother-in-law's advice. In both type of mothers doctor had influenced 4.3-5% LL / V 48-50%, TBAA 42-48, untraained Dais 2-3.7. Of all mothers only 55% were able to fulfil their desire. Out of those who succeeded, majority of them living in extended families, which is contrary to the prevailing impression that mothers living in extended families do not get their proper share of diet due to large family. Probably they are able to take diet secretely with the help of husbands or they do not sacrifice their share because they are not responsible for intra-family distribution of diet as mothers living in nuclear family. Further it is also clear that LHV and TBA can also be very helpful to improve the knowledge of these target group of mothers.

Introduction

Pregnancy and lactation is always taken as most desired state by the married women and although it is a physiological state for the women but still a stress appears on the body resources.

Each stage of life cycle has specific nutrient needs. Through out infancy, childhood, and adolescence are required to meet the growth processes as well as cognitive function like pregnancy or lactation[1].

Those mothers who have a good nutritional status in pre-pregnancy / pre-lactational stage bear this stress quiet easily. But borderline mothers and already under nourished mothers face problems not only themselves but also for foetus / infant.

Although nutrition and food science have each enhanced the development of an abundant nutritious, safe food supply[2]. More over emphasis is given to nutrition service for mothers, children and families from the mid-1800 through the 20th century[3].

But still nutritional status of any person develop on the basis of nutritional knowledge and dietary practices which a person has which in turn develop on basis of many factors e.g religion[4], local culture[5], social status, economical status, local availability of foods, education, household resources, household characteristic (urban / rural) (nuclear / extended) and individual characteristics etc.

Dietary intake of the mothers also depends on intra family distribution of food. This intra family distribution of food depend on many factors like household resourses, household characteristic (ruban / rural) (nuclear / extended) and individual characteristics.

Nutritional knowledge and dietary practices are also formulated under the influence of others with whom a person usually come across e.g. husband, mother-in-law, mother, friends, neighbors and medical professionals etc.

In Calcutta the daily consumption pattern of foods of various foods revealed that the adult male consume more of every food item while women of all ages consume less of every food item than men of the same age[6].

Intra-family food distribution affects the nutritional status of household members through the portion of foods served and consumed by individuals[6].

There is often a real difference of opinion as to who makes decision for family distribution of foods as matter is a private one. This decision making usually based house-hold resources, house-hold characteristics and individuals characteristics[6].

Household characteristics are although very important but unfortunately detail informations on their implication are not available.

This study was designed to see the effect of some house-hold characteristics (nuclear / extended) on the nutritional knowkedge and dietary practices in pregnant and lactating mothers in a rural set up.

Aims and Objectives

1. To see the existing nutritional knowkedge and dietary practices in pregnant and lactating mothers in a rural set up.
2. To see the effect of a house - hold characteristic (nuclear / extended) on the nutritional knowledge and dietary practices in pregnant and lactating mothers in a rural set up.
3. To formulate an nutritional education plan to improve the nutritional knowledge and dietary practices of all concerned.

Methodology

This study was conducted in two villages Bulhar and Raja Bola in Lahore District. A list of pregnant and lactating mothers was prepared in both villages. A stratified random sample of 50 pregnant and 50 lactating mothers was drawn. These mothers were explained purpose of study and then interviewed a preformed pretested questionnaire further random selection was made to compensate the drop outs.

Findings

Out of 100 mothers (65 nuclear, 35 extended interviewed in the area, 50 were pregnant (29 nuclear, 21 extended) and 50 were lactating (36 nuclear, 14 extended). Fig. 1.

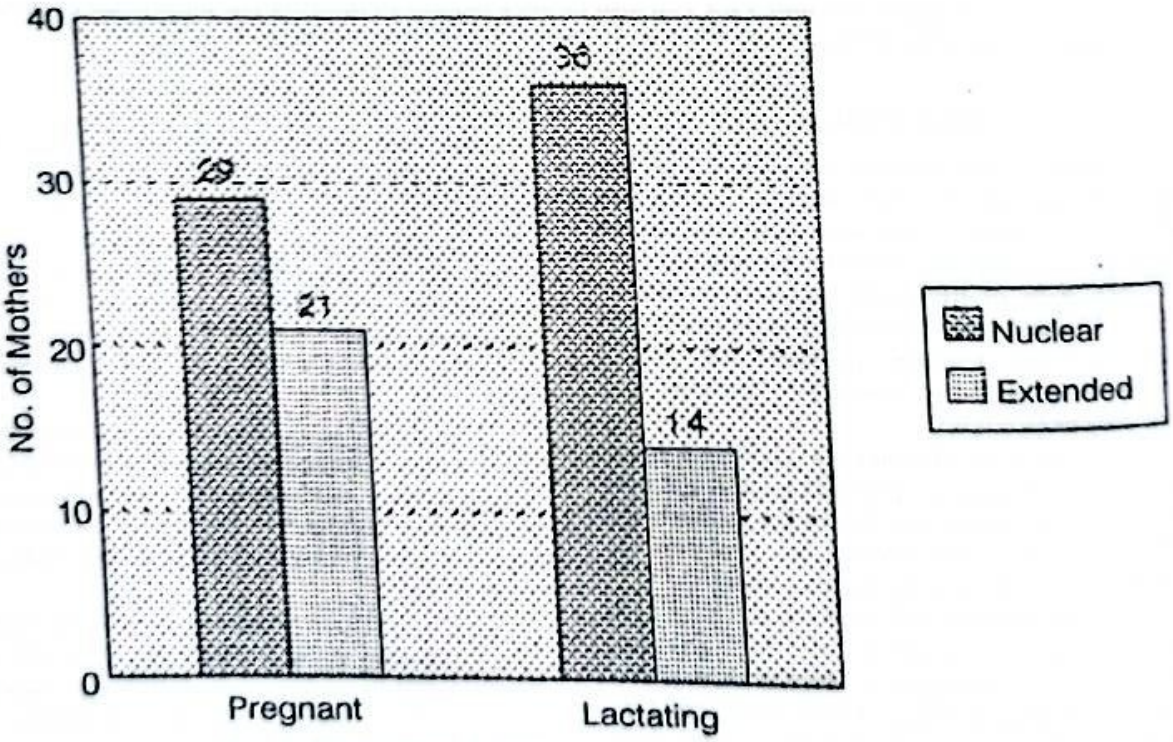

Fig. 1 Distribution of Mothers According to Family Centre

Knowledge

Among the 50 pregnant mothers, 45 (25 nuclear and 20 extended) showed a positive knowledge that diet should be increased during pregnancy by adding milk, meat, fruits, lassi and roti with the reasons that these items improves the health of the mother as well as of baby. Some food prevent indigestion to mothers during pregnancy.

Where as among the 50 lactating mothers, 46 (33 nuclear and 13 extended) showed this type of knowledge for improving the milk production during lactational period. Food items and reasons almost similar to pregnant ones.

26 pregnant mothers (17 nuclear and 9 extended) had the knowledge that some specific food items should be avoided during pregnancy. e.g. egg, tea, mango, beef, karely, brinjal, dahi bhaly, grains, dal masoor, fish, picide, culbmber, spainch and potato because they are thought to be too hot, beef cause cholera, some causes dirrhoe, some causes diabetes, some causes sore sore throat, some causes heart burn or indigestion to mothers and other things are not good for health of mothers and foetus. Pregnant mothers living in nuclear families were significantly more in favour of these avoidance (Table A). Where as 15 mothers (8 nuclear and 7 extended said nothing should be avoided during pregnancy.

Similarly 34 lactating mothers (22 nuclear and 12 extended) had the knowledge about avoidance during lactation. e.g beef, sour items, date, grains, uncooked grains karely, black grains, melon, dal masoor, picide, yougurt, orange, vermicelli and culbmber because they are thought to cause sore throat, cause indigestion to baby, too hot. Where as 16 lactating mothers (14 nuclear and 2 extended) said nothing should be avoided during lactation.

Practice

Out of 50 pregnant mothers, 44 mothers (25 nuclear and 19 extended) had changed the diet by increasing the total intake with the addition of milk, meat, fruits, vegetable, lassi and desi ghee. Pregnant mothers living in nuclear families had increased their diet significantly.

While out of 50 lactating mothers, 49 mothers (35 nuclear and 14 extended) had changed the diet by increasing the total intake. Fig. 2.

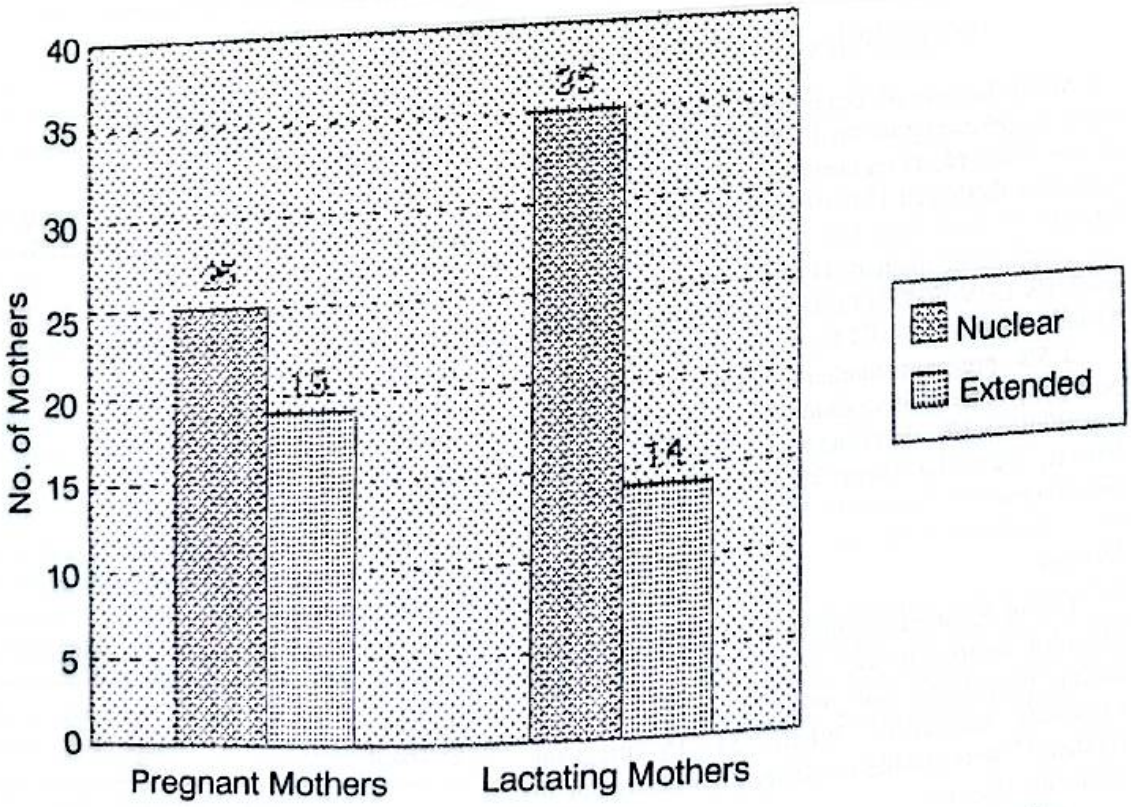

Fig. 2 Distribution of Mothers WHO Changed Their Diet During Prengancy / Lactation

26 pregnant mothers (16 nuclear and 10 extended) said that they have avoided some specific food items during pregnancy.

Similarly 34 lactating mothers (25 nuclear and 9 extended) said that they have avoided some specific food items during lactation.

Influence of other persons

The nutritional knowledge and dietary practices of pregnant / lactating mothers are influenced by 3-groups of peoples.

40% pregnant mothers (25 nuclear, 18 extended were practicing on the basis of self knowledge, 10% (9 nuclear, 1 extended on husband's advice, (Table 1) 30% (14 nuclear, 17 extended) on mother's (Table 2) and 20% (7 nuclear, 13 extended) on mother-in-law's advice.

Table 1 *Effect of Husband's advice on pregnant mother's knowledge and practice about diet*

	Influenced	Not Influenced
Nuclear	9	20
Extended	18	3
	P-Value-0.0218	chisaquare-5.52

While in case of lactating mothers 47% (30, 11) were practicing on the basis of self knowledge, (Table 3) 6% (4, 1) on husband's advice, 28% (13, 11) on mother's and 17% (9, 8) on mother-in-law's advice.

In pregnant mothers Doctors influenced 4.3% mother's LHV 50%, (Table 4) TBAs 42% (Table 5) and untrained dias 3.7%.

1.5% pregnant mothers advised by friends, 50.5% by other relatives and 48% by neighbours.

While .2% lactating mothers advised by friends, 52% by other relatives and 46% by nieghbours.

Desires

Out of 50 pregnant mothers 37 (21 nuclear, 16 extended desired to eat some special food item during pregnancy, but only 22 (9 nuclear, 14 extended) succeeded. Where as 15 pregnant mothers[9,6] were unable to satisfy their desire due to economic reasons.

Where as out of 50 lactating mothers 39[26,13] desired to eat some special food item during lactation, but only 22 (9, 13) succeeded. Where as 17 lactating mothers (9, 8) were unable to satisfy their desire due to economic reasons.

Discussion

Majority (65%) of these mothers were living in nuclear families. Most (90-92%) of these mothers showed a knowledge for increased intake in these stress periods and almost the same number has practiced this knowledge by adding some food items or increasing the amount of foods. Simultaneously some avoidances are also practiced but by lesser number of mothers with similar ratio of nuclear and extended mothers.

Pregnant mothers living in extended families are significantly influenced by their own mothers as well as mothers in law. (Table 2)

Table 2 *Effect of mother's advice on pregnant mother's knowledge and practice about diet*

	Influenced	Not Influenced
Nuclear	14	15
Extended	17	4
	P-Value-0.0187	chi-saquare-5.32

Where as pregnant mothers living in nuclear families are influenced significantly by their husband's knowledge (Table 1).

Pregnant mothers living in nuclear families were significantly affected by LHV and trained dias. (Table 4 and Table 5).

Lactating mothers living in nuclear families are significantly influenced by their own knowledge (Table 3)

Table 3 *Effect of knowledge of Lactating mothers on their own dietary practices*

	Influenced	Not Influenced
Nuclear	30	3
Extended	11	6
	P-Value-0.02237	chi-saquare-5.22

Table 4 *Effect of LHV's advice on pregnant mother's knowledge and practice about diet*

	Influenced	Not Influenced
Nuclear	25	4
Extended	8	13
	P-Value-0.00039	chi-saquare-12.56

Table 5 *Effect of Trained dia on pregnant mother's knowledge and practice about diet*

	Influenced	Not Influenced
Nuclear	29	0
Extended	9	12
	P-Value-0.0000030	chi-saqauare-21.80

Table 6 *Effect of Trained dia advice on Lactating pregnant mother's knowledge and practice about diet*

	Influenced	Not Influenced
Nuclear	30	3
Extended	9	8
	P-Value-0.0039	chi-saqauare-9.43

Lactating mothers living in nuclear families significantly more influenced by trained dias. (Table 6)

Where as mothers living in nuclear families are more influenced by the knowledge of medical professional and mothers etc.

Dietary intake of the mothers also depends on intra family distribution of food. This intra family distribution of food depend on many factors like.

It is also interesting to note that out of 37 pregnant mothers only 22 succeeded in eating some desired food items and in them percentage of those living in extended families was significantly higher. Similarly in lactating mothers out of 39 who desired to eat some desired food items, only 22 succeeded and again the percentage of those belonging to extended families was significantly higher. The reason could be that when a woman is living in nuclear family she usually is in control of intra-family distribution of foods and she sacrifices for the children and husband and avoid eating desired food items in poor economical circumstances. Where as those living in extended families try to eat the desired items although at times it is done with the cooperation of husband secretly.

It appears from these findings that house-hold characteristics like nuclear / extended definitely affect the formulation of nutritional beliefs and practices in pregnant / lactating mothers.

Mothers living in extended families, prefer to adopt the advise from out side eg. mother, medical professionals etc. Where as those living in nuclear families try exercise their own and husband's knowledge and the advise of mother in law is usually not liked.

This social problem needs improvement and where the nutritional counselling is done, other persons living with the pregnant / lactating mothers (husband, mother in law) should also be educated so that they may not take increased / changed in take as unwanted.

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THE EFFECTS OF LINDANE ON PLATELET COUNTS AND MEGAKARYOCYTES IN RABBITS - AN EXPERIMENTAL STUDY

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Summary

Lindane is a synthetic insecticidal agent used in agricultural practice. In this experimental study effects of lindane were observed on platelet counts and megakaryocytes in rabbits. Ninety rabbits were divided in nine groups according to dose level. Low platelet counts and suppression of megakaryocytes were observed in six test animals. This suppression was related neither to dose nor to duration of exposure to lindane.

Introduction

Lindane is the commercial name given to the pure gamma isomer of chlorinated hydrocarbon insecticide Benzene Hexachloride. Although insecticidal use of lindane began in 1942, the suppressive effect of lindane on hemopoietic system was first reported in 1953. Further studies revealed that lindane causes injury at the level of bone marrow[1]. According to a detailed report in 1965 lindane was suggested as a possible etiologic agent responsible for various cases of bone marrow suppression including suppression of megakaryocytes[2]. Other workers have also described lindane to be directly or indirectly responsible for several cases of blood dyscrasias[3]. According to a report published by WHO in 1975, 79 persons exposed to lindane were studied, in which no evidence of bone marrow suppression or megakaryocytic suppression was found[4]. However, in 1989 cases of bone marrow suppression including suppression of megakaryocytes were reported. In all these cases there was a definite history of exposure to lindane[5]. This experimental study was undertaken in order to observe the effects of lindane on thrombopoiesis in rabbits.

Materials and Methods

A total of 90 healthy domestic adult rabbits were used as experimental animals. They were divided into nine groups. Ten animals were included in each group. Group I served as normal control. The remaining eight groups were test groups at different dose levels shown in Table 1.

Table 1 *Dose Levels of Lindane for different Groups of Rabbits*

Group	Dose Level
I	Control
II	5 mg / kg body weight
III	10 mg / kg body weight
IV	15 mg / kg body weight
V	20 mg / kg body weight
VI	30 mg / kg body weight
VII	60 mg / kg body weight
VIII	90 mg / kg body weight
IX	120 mg / kg body weight

Adjustment of Highest Dose

LD-50 of lindane for different animals in oral administration is 25-200 mg / kg body weight[6]. In order to prevent animal death due to over dosage, highest dose was kept at 120 mg / kg body weight.

Preparation of Dose

Lindane is readily absorbed from alimentary canal when dissolved in corn oil[7]. Respective dose for each group was given orally once a day.

Collection of Samples

First samples were collected at the end of second week. Sampling was repeated at an interval of two weeks till the end of sixteenth week.

Blood samples were collected from medial peripheral vein of rabbit ear by venepuncture. For the collection of bone marrow samples animals were anaesthetised by open either anaesthesia. The skin and muscles overlying the femur were incised and upper end of femur was exposed. The femur was resected, and bone marrow taken out to prepare smears on clean glass slides. Animals were sacrificed after collection of samples.

Investigations and Procedures

Platelet count and bone marrow examination for each sample was carried out in accordance with the recommended procedures.

Results

Observations on animals of test groups were compared with control group animals.

Platelet Count

Normal range for platelet count in rabbits is 126-1000 x 10^9 / L. In our study six test animals showed thrombocytopenia. Table 2 shows platelet counts of these animals against their respective dose levels and time of collection of samples.

Table 2 *Platelet Counts of Rabbits showing Suppression of Megakaryocytes in Bone Marrow*

Weeks	Dose Level (mg / kg)	Platelet counts (X 10^9 / L)
6th	60	20
6th	90	110
6th	120	45
10th	05	60
10th	20	100
14th	20	27

Bone Marrow Smear Examination

Six animals showing thrombocytopenia also showed reduction in the number of megakaroycytes, on examination of bone marrow smears.

Discussion

This study was carried out on 90 healthy rabbits which were divided into nine groups. Each group included ten rabbits. Animals from group I served as normal control. Remaining acted as test groups.

A number of cases with low platelet counts and suppression of megakaroycytes in bone marrow were mentioned in WHO data sheet on pesticides in 1975[4]. There was a history of exposure to lindane. Blair et al also made similar observations in 1985[8]. In our study low platelet counts were observed in six test animals. At the end of sixth week of lindane administration test animals at dose levels of 60 mg / kg body weight, 90 mg / kg body weight and 120 mg / kg body weight showed platelet counts of 20 x 10^9 / L, 110 x 10^9 / L, and 45 x 10^9 / L, respectively. These were below normal limits. A decrease of 94.11%, 67.64% and 86.76% was shown by these test animals respectively. Similarly test animals at dose levels of 5 mg / kg body weight and 20 mg / kg body weight showed platelet counts of 60 x 10^9 / L and 100 x 10^9 / L respectively, at the end of tenth week of lindane administration. These platelet counts were below normal limits. These animals showed a decrease of 83.33% and 72.22% from control animal, respectively. Another animal at dose level of 20 mg / kg body weight showed a platelet count of 27 x 10^9 / L at the end of fourteenth week of lindane administration. It was below normal range and it showed a decrease of 94.00% from the control animal.

Many workers have reported suppression of megakaryocytes in cases with history of exposure to lindane[9-12]. In our study six test animals showing low platelet counts also showed suppression of megakaryocytes on bone marrow examinations.

Conclusions

As a result of this experimental study it can be concluded that lindane caused suppression of platelets and megakaryocytes in test animals. This was related to individual susceptibility of the rabbits. No relationship was found either with dose or duration of exposure to lindane.

Experimental studies at best can provide only an indication of the type of damage which may be expected. Intensive studies and reporting of human cases should be undertaken whenever circumstances permit. It is therefore recommended that indiscriminate use of lindane be prevented. Proper

preventive measure should be taken by those exposed to lindane and other insecticides either at home or in agricultural practice. The continuous extravagant promotion of certain types of insecticides is also of great importance to those responsible for protection of public health.

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PATTERNS OF UTILIZATION OF DENTAL HEALTH SERVICES & PERCEIVED BARRIERS TO THE UPTAKE OF DENTAL HEALTH SERVICES BY ADULT FEMALES OF PAKISTANI ORIGIN RESIDENT IN LONDON, UK

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The study investigated the dental health behaviors and the barriers to the utilization of dental health services amongst the 55 adult females of Pakistani origin resident in London, UK, who participated in the study. A high percentage had received education over 18 years of age. Most of the subjects reported going to the dentist at some time or the other, majority saying they went when in pain or problem. A number of barriers were identified for the utilization of dental health services, cost being a major factor. Age and education level was not seen to affect the utilization of dental health services.

Introduction

Inappropriate and incorrect information or lack of knowledge may lead to dental health behaviors deterimental to dental health or even false sense of security relating to dental health. This might in turn interfere in change to healthy behaviors[1].

A number of factors influence the patterns of utilization of dental health services in an individual either acting as a motivational factor or keeping him or her from the uptake of preventive measures. These have been identified amongst others as age and education level of the individual.

An individuals age is an important factor related to the uptake of dental health services. Individuals in the younger age group are more likely to attend dental clinics for dental health measures than the older age group, exceptions are the very young and the very old who rarely use them[2,3]. The older people are said to use emergency treatments more and use services more often when in pain[4]. Women are reported to be more frequent users than men. This holds true for Asian women too, and was related to the length of stay in the country of migration[5].

Education, too, is an important factor associated with the uptake of services[6-10] Other factors include type of job and job security, taking time off work, socio-economic group, cost of treatment, availibility of dental health services, accessibility / distance to be travelled, individuals perceptions and attitudes, past dental experience, language, ethnic origin, internal environment of the surgery, and salient referrals[2,5,7,10-25] Effect of these factors on the uptake of dental health services will be discussed seperately.

The main aim of the study was to establish if age and the level of education were the factors related to the patterns of utilization of dental health services and also to know the perceived barriers to the utilization of dental health services and to find if these possible barriers actually kept the study population from uptake of dental health services.

Methodology

A list of Women's Associations in London was consulted and contacted for their membership of Adult Females of Pakistani origin. One Islamic centre and two Muslim Women's Association had the highest membership of the females that fit into the criteria set for the study i.e. females between the ages of 16 and 65 years.

Consent was taken from these Associations and the Islamic centre for conducting the study. Consent was also taken from the subjects being interviewed. A total of 57 adult females of Pakistani origin were contacted, of whom 55 gave consent to be included in the study.

The study comprised of the use of a structured questionnaire administered by the interviewer after reading it out to the individual subject being interviewed and noting down their responses in the appropriate columns.

The questionnaire was designed to investigate the patterns of use of dental health services, possible barriers to the uptake of dental health services, and the effect of age and education on the uptake of services.

The level of education was assessed by the age at which the individual had completed her studies and was divided into two broad groups, one who had completed their studies upto the age of 18 years and the second group who had received education for over 18 years of age. A large population comprised of females undergoing studies (still students) and belonging to different age groups. This group was excluded for the correlation for the level of education.

All subjects present in the Associations common room on the day of the interview were asked to participate in the study, and to avoid replication a separate list of those already interviewed was kept with the Association's office.

After collection and coding of data, SPSS-X computer software was used for analysis of data. Chi square test with Yates Correction and where applicable Fishers exact test was used to study the association between the study variables. $P<0.05$ was used as a cut-off point.

Results

The details of the respondents ages are given in Table 1, and their educational level is given in Table 2. Table 3, Table 4, and Table 5 show the patterns of dental attendance, the time period of last visit to the dentist, and the reason for the last visit to the dentist repectively, of the study population. The subjects who were still undergoing their studies were not included in the analysis for comparison for level of education. Of the total study population only 3 subjects reported not going to the dentist.

Table 1 *Age Grouping of study population*

Age	No. (%)
< = 30 years	28
> 30 years	27
Total	55

Table 2 *Age at which Education completed*

Age	No. (%)
Upto 18 years of age	24 (60%)
Over 18 years of age	16 (40%)
Total	40

Table 3 *Patterns of dental attendance*

Patterns of attendance	No. (%)
Only when in problem	26 (42.27)
Regular checkup	26 (42.27)
Never	3 (5.45)
Total	55 (100)

Table 4 *Most recent visit to the dentist*

Time	No. (%)
< 1 year ago	33 (63.47)
1-2 years ago	9 (17.30)
Over 2 years ago	10 (19.23)
Total	55 (100)

Table 5 *Reason for the last visit to the dentist*

Reason	No. (%)
Check-up	22 (42.30)
Treatment	30 (57.70)
Total	52 (100)

While studying the effect of age on the patterns of utilization of dental health services, a higher proportion (28.6%) of respondents upto the age of 30 years visited their dentist for regular check-ups as compared to 21.2% of the respondents of 31 years of age or above. The latter

group reported going more often when in pain or problem. However, the difference was statistically non-significant (Chi q 1.23, p = 0.07).

More (32.6%) subjects in the upto 30 years age group reported having been to the dentist during the previous year compared to 30.7% of the subjects in the other age group. The difference between the two age groups in the time of the last visit to the dentist was statistically non significant (Chi sq. 54, p = 7).

Comparitively more subjects (30.7%) in the younger age group reported visiting their dentist for check-up during their most recent visit as opposed to 23% of the subjects in the above 30 years age group. The results did not produce any significant difference between the two age groups.

When co-related with the level of education, those having received education upto 18 years of age were more likely to utilize dental health services when they had some problem or when they were in pain (N = 14) compared to 9 subjects in the other group. The statistical difference was not of significance.

13 of the subjects belonging to the group having had received education upto 18 years of age reported the most recent visit to the dentist during the previous one year compared to 10 subjects in the other group more subjects in this group reported using the services for treatment purposes (11 subjects) compared to the group who had received education for over 18 years of age (n = 3). The results were non-significant.

Of the total study population, only one response was about facing difficulty in receiving dental treatment. This was identified as long appointment times given by the dentist and being unable to visit the dentist without prior appointments. 15 (27.2%) subjects (11 in the 30 years age group and 4 in the over 30 years age group) reported that there was nothing that could prevent them form uptake of dental health services. According to the age at which the subjects had completed their education of those who reported no barrier to the uptake of dental health services, 4 subjects belonged to the group having completed their education upto 18 years of age, 5 subjects had completed their education over 18 years of age and the rest of the subjects were still undergoing studies. However, the remaining respondents reported one or more perceived barrier. The list of the reported barriers is given in Table 6.

Table 6 *Reported perceived barriers*

Reported barriers	No. (%)
None	15 (27.27)
Cost	15 (27.27)
No perceived need	15 (27.27)
Time off work	7 (12.72)
Unnecessary treatment	6 (10.90)
Fear of pain	5 (9.09)
Fear of injections	4 (7.2)
Language	3 (5.4)
Travelling	2 (3.6)
Long appointment times	2 (3.6)
Bad past dental experience	1 (1.8)
Filling in forms at the dentist	1 (1.8)

Table 7 *If perceived barriers prevented from uptake of dental services by age group*

Response	Age		
	< = 30 years	> 30 years	Total
Yes	3 (9.67)	19 (61.29)	22 (70.97)
No	7 (22.58)	2 (6.45)	9 (29.03)
Total	10 (32.25)	21 (67.75)	31 (100)

chi square = 12.02, p = .0005

The reported barriers kept more subjects in the over 30 years age group (n = 19) from utilization of services compared to 3 subjects in the lower age group. The difference between the two age groups was statistically significant ($p<0.05$, Fishers exact test = 0.001). On the basis of the age at which education was completed no difference between the two groups was found, with 3 subjects of the total of 15 having received education less than 18 years of age reported not being prevented from the uptake of dental services compared to 4 subjects in the other group.

Discussion

The main purpose of the study was to compare the dental health behaviours in different age groups and education groups amongst adult females of Pakistani origin resident in London, UK.

The age range of the study population was too wide for any meaningful statistical analysis. Thus it was necessary to divide the study group into two i.e., subjects upto the age of 30 years and the subjects over 30 years of age. Similar grouping had to be done for the age at which the subjects had finished their education. For the purpose, one group comprised of subjects having finished their education upto the age of 18 years and the other group comprised of subjects who had completed their education at over 18 years of age. Omitting the large group comprising of students (15 subjects) reduced the study group even further when comparisons were made for the level of education received.

It may also be noted that the study population was too small for the results to be generalized; therefore, the results should be interpreted with caution.

It was interesting to note that most of the analysis done was non-significant when cross-tabulated for age and the age at which education was completed, though some of the results were significant for these variables.

In the present study, too, the older subjects were seen to have a low preceived need which has also been reported by Mattin and Smith (1991), Schou and Eddie (1991) and Kiyak and Miller (1982).

In accordance with the findings of Patel and Gelbier (1991), and Mattin and Smith (1991), Williams and Gelbier (1988), a high percentage of the respondents in the present study also reported vising the dentist when in pain or when having some problem. One of the most important factors in the decision to seek care is the extent to which the person feels and recognize the need. Felt need can be assesed by asking people whether they feel the need for a particular service.

Like the findings of Kiyak and Miller (1982), no significant corelation was found between the level of education and the dental service utilization. A very high percentage (50% of the subjects) reported going to the dentist for checkups. In the Adult dental health survey 1988, U.K.; 59% of the adult population reported going to the dentist for check-up during their most recent visit. The pain phenomenon for seeking dental care might thus not be correct for the Pakistani community as sugessted by Patel and Gelbier (1991), and Mattin and Smith (1991), for the Asians. There may be some doubt about the reliability of replies e.g., over reporting of regular attendance was found to be a problem by Gratrix, Taylor and Lennon (1990).

A corelation has been suggested by Bullough (1972) between the level of education and the utilization of dental health services. Like the findings of Kiyak and Miller (1982), in this study too, no significant corelation between the levels of education and the levels of dental service utilization was found.

Though the number was too small to be of much significance, one subject reported not going to the dentist because of negative previous dental experience. Such a negative dental experience has been suggested as a barrier to the uptake of dental services by Kegeles (1963), Ruell-Kellermann (1984). Dentists were reported to be performing un-necessary treatments by some of the respondents.

Conclusion

In conclusion it can be said that the Adult females of Pakistani origin utilize dental health services mainly when in pain or problem. The older age group has low perceived need for dental health matters. Age and education do not hinder in the use of dental health services. This particular group identified a number of factors which could act as a barrier for them in the utilization of dental health services. Cost can be a barrier in the uptake of services.

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ASSESSMENT OF DIRECTLY OBSERVED TREATMENT SHORT COURSE (DOTS) STRATEGY IN THE MANAGEMENT OF TUBERCULOSIS PATIENTS AT MAREEABAD HEALTH CENTRE, QUETTA

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A cross sectional descriptive study was conducted to assess the DOTS strategy at Mareeabad, Health Centre, Quetta where DOTS has been implemented for tuberculosis (TB). The results of the study showed that the sputum smears of all the 32 (100%) patients were examined according to the schedule. Observers at the time of drug intake were present in all (100%) patients. Drugs were supplied free of cost to all (100%) patients. 31 (96.9%) patients were attending the health centre regularly, only 01 (3.1%) patient was not attending the health centre, he was supervised at the time of swallowing the medicine by a community health worker at his work place. Presently all the patients were on their way to cure from TB. So the DOTS strategy is operating according to the set standards of WHO and National guidelines for tuberculosis control so this may be regarded as a model T.B. control centre.

Introduction

Tuberculosis is one of the emerging infections diseases affecting both industrial as well as developing countries. According to estimates, 15-20 million tuberculosis cases are in the world[1]. The tuberculosis situation, like many other developing countries is very grim in Pakistan. As per World health Organization (WHO) estimates, more than 3 lac of new cases of tuberculosis develop in the country every year, three quarters of which are concentrated in the productive age group i.e. 15-59 years[2]. The delay in diagnosis, inability to treat a high proportion of pulmonary smear positive and multiple drug resistant cases are the main reasons of increased morbidity and mortality connected with the disease[3]. Although anti-tuberculosis medicines are almost 100% effective in killing TB.

Bacilli, but their efficacy is markedly declined when there is problem like patient's compliance, intermittent supply of medicines, inappropriate combination of drugs etc. To overcome the above mentioned factors regarding the management of TB-patients, the concept of directly observed treatment short-course (DOTS) was evolved[4].

In Pakistan the DOTS strategy has been instituted in a few health facilities in almost all provinces on small scale. The patients are being managed by the application of DOTS for quite a long time at these health facilities. Now there is a need to assess the DOTS strategy being utilized for the TB patients at these centers. Therefore a study was conducted at Mareeabad health centre, Quetta to assess Dots so that findings of the study can be disseminated to health Policy makers and this strategy can be recommended for all TB patients throughout the country.

Materials and Methods

The study was carried out in area of Mareeabad situated in Quetta district. It is about 15 km from the General Post Office (GPO) in the east of Quetta valley. The estimated population of Mareeabad is about 200,000 people with average family size about six person per family. The land scape of the Mareeabad Health centre area is hilly. Ethnically, majority of the people in the survey area are Changazi whose mother tongue is persian. In the terms of precise religious affiliation, almost all are Shia Muslim with small numbers of Sunni Muslims. Women are the most conservative in relation to Purdah.

It was a cross sectional descriptive study to investigate the application and functioning of DOTS strategy at the health centre from 20th June 1997 to 28th August 1997. The study population consisted of tuberculosis patients receiving DOTS strategy at health centre. To collect the data regarding assessment of DOTS strategy, a semistructured interview schedule was used. The collected data was analysed accordingly

Results

(a) Patient's background

Majority of the patients, 62.5% were in the age group of 25-45 years. 25 (78.1%) were males and 7 (21.9%) were females (Table-I).

Table 1 *Distribution of Patients by their Sex*

Sex	Frequency	Percentage
Males	25	78.1
Females	07	21.9
Total	**32**	**100.0**

22(68.7%) were illiterate, and 10 (31.3%) were literate with different levels of education. (Table-II).

Table 2 *Distribution of Patients by their Education*

Education	Frequency	Percentage
Illiterate	22	68.7%
Primary	04	12.5%
Middle	04	12.5%
Matric	02	6.3%
Total	**32**	**100%**

26 (81.3%) had monthly income less than Rs. 2000/-per month. 20 (62.5%) patients have other 5-8 family members residing with them. 14 (43.8%) had less than 3 living rooms in their houses.

(b) Assessment of DOTS strategy

Out of all 32 patients, 31 (96.9%) patients were attending the health centre regularly for taking their medicines. 17 (53.1%) patients got medicines from EPI technicians, 12 (37.5%) from lady health worker, 2 (6.3%) from staff nurse and only 1 (3.1%) got medicines from community health worker. 17 (53.1%) patients were observed by EPI technician, 12 (37.5%) by lady health worker, 2(6.3%) by staff nurse and 1(3.1%) was observed by community health worker (Table-III).

Table 3 *Frequency Distribution of the Patients Regarding Persons Observing While Swallowing the Medicine*

Observer	Frequency	Percentage
EPI Technician	17	53.1%
LHW	12	37.5%
Nurse	02	6.3%
CHW	01	3.1%
Total	**32**	**100%**

Sputum of 20 (62.5%) patients was examined at the end of 2 months, 09 (28.1%) at the end of 5 months and the 03 (9.4%) patients were examined at the end of 8 month for their sputum respectively. (Table IV).

Table 4 *Frequency Distribution of the Patients Regarding their Sputum Examination at Different Time interval*

Sputum examination time interval	Frequency	Percentage
2-months	20	62.5
5-months	09	28.1
8-months	03	9.4
Total	**32**	**100%**

Almost all the patients were satisfied regarding their treatment. All the patients were imparted health education.

Discussion

As described in the results, the majority of male patients (78%) attended the health centre for their ailments. It may be because of more exposure of the males and also probably the women are more conservative in attending the health centre because of strict religious affiliations in the study area and also that the females are generally overlooked for their ailments especially in the remote area and thus an infectious chain is maintained inspite of best anti TB treatment available. This can be eliminated to some extent by proper health education and family counselling.

The study shows that about 69% of the patients are illiterate and about 81% are earning Rs. <2000/per month. The majority of the patients 62.5% have also other 5-8 family members residing with them and 43.8% possesses less than 3 living rooms in their houses. All these major socioeconomic factors play a vital role in the further strengthening of vicious cycle of infection and increasing the risk of transmission of disease among other family members so this needs badly socioeconomic uplift in the study universe.

Regarding DOTS strategy, this seems very encouraging that 100% of the patients are being observed by different paramedic staff at the time of swallowing the medicines. These results are similar to the study conducted in Korea in which DOTS was applied in 100% study group of TB patints with 75.2% efficacy[5]. The results are even better than a study which was conducted in South Africa in which 87% TB patients were treated with DOTS strategy[6].

The uninterrupted drug supply is regarded as the "HEART OF DOTS" strategy. In our study all the patients got medicines regularly and free of cost during DOTS applicaion. This reflects high political commitment by the Government and seems to be staisfying regarding the DOTS. In the light of results of the study, the following conclusions are made:

- The DOTS strategy should be implemented in the government health facilities all over the country.
- The private practitioners should be involved in the DOTS strategy.
- The NGOs should be encouraged regarding DOTS.
- The Health Programmes like DOTS needs a strong political commitment.
- Health Education of the people, motivation of community leaders and preparation of the community health workers should be part and parcel of the DOTS strategy.

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IODIZED SALT USAGE-RESULTS OF A KNOWLEDGE ATTITUDE AND PRACTICE SURVEY

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Introduction

It is now well recognised that iodine deficiency disorders (IDD) are a serious problem for Pakistan and are not limited to the northern areas, as was once thought. At the first national conference on IDD held in Islamabad in 1994 available evidence suggested that probably 50 million Pakistanis are prevented from attaining their full mental and physical potential due to iodine deficiency. A nation-wide study measuring serum thyroid stimulating hormone levels conducted in early 1994 presented an alarming picture showing that more than 70% infants tested had elevated TSH levels and were iodine deficient[1]. Iodine deficiency can lead to a number of problems including (a) Abortions, still births, congenital anomalies, increased perinatal mortality. (b) Neurological cretinism including mental deficiency, deaf mutism, spastic diplegia and squint. (c) Myxematous cretinism including dwarfism, mental deficiency psychomotor defects and retarded physical development in children. In adults it can lead to goitre, impaired mental functions, and hypothyroidism. Ensuring the provision of small quantities of iodine to the population at large can largely eliminate these conditions. Realising the gravity of the problem the government of Pakistan has introduced a salt fortification programme with the assistance of international agencies like the UNICEF, WHO and ICCIDD. While the health benefits alone are sufficient reasons to justify the iodization of salt the social implications are also important enough to merit consideration. These include decreased medical costs associated with the management of conditions like goitre, hypothyroidism and mental retardation. It would also mean improved worker productivity better-educated and brighter citizens. It has been estimated that it costs three rupees per person per year to iodise all salt for human and animal consumption countrywide. A small price to pay to ensure that all Pakistanis avoid the loss of 10-13 IQ points[1]. In Pakistan in order to overcome the problem two strategies have been followed these are iodine supplementation and fortification. The latter seems to be the most cost effective. The ISSF a division of social marketing Pakistan (Limited an NGO is responsible for implementing the iodised salt project in Pakistan. The project is responsible for (a) motivating salt processors to switch their production of edible salt from ordinary to iodised. (b) Communicating to the public the importance of iodised salt and the effects of iodine deficiency disorders so as to create sufficient demand and awareness.

Materials and Methods

A cross sectional knowledge attitude and practice survey was conducted in the paediatric out patient department of a teaching hospital in Rawalpindi. 200 women in the childbearing age who were attending the hospital were selected. The justification of selecting patients was that it provided an opportunity to conveniently assess the level of health education that they received from health personnel. Women were selected since they and their children are the main vulnerable group. They are also primarily responsible for introducing iodised salt into their homes. The immediate objective of the survey was to quantitatively evaluate the health education being imparted. The social, economic and health factors associated with the utilisation of iodised salt were also investigated. The implication of the survey is to enable policy makers and programme administrators to identify appropriate educational strategies and approaches to uniformly increase iodised salt utilisation through out the country.

Results

The survey has provided some useful insight regarding the use of iodised salt by the general public. As is seen in Table 1 the majority of the people 94.5% have knowledge about iodised salt. Table 3 shows that out of those who have heard about iodised salt 59% dont't consider it important to use it. Table 4 demonstrates that only 38.5% of the respondents are using iodised salt regularly.

Table 1 *Knowledge about iodised salt n = 200*

Respondents who have heard about iodised salt	189	94.5%
Those who have not heard about it	11	5.5%

Table 2 *Source of information for those who were knowledgeable about iodised salt n = 189*

Mass media T.V. Radio Newspapers	140	70%
Community / Other People	32	16.5%
Doctor / Health Worker	17	8.5%

Table 3 *Attitude about Iodised salt of those who are not using iodised salt n = 112*

Causes Reasons for Non Usage / Discontinuation	No. of Respondents	%
Do not consider it important to use	66	59%
Consider it to be used for family planning	16	14%
Consider it to be hazardous to health	18	16.1%
Bad Taste	3	2.6%
Costly	5	4.5%
Non-availability	4	3.5%

Table 4 *Practice. Use of Iodised salt. n = 200*

Respondents using iodised salt regularly	77	38.5%
Used iodised salt in the past	67	33.5%
Not using iodised salt at all	56	28%

Out of the 200 respondents, interviewed 48 or 24% had goitre in their families.

Discussion

The survey shows that 61% of the respondents are not using iodised salt which is a sizeable number considering that the study was conducted in a city. Further it is seen that there was a drop out rate of 33.5%. The main reason cited for discontinuation was due to an absence of appreciating any discernible change in health status or feeling of well being. Therefore, the respondents did not consider it important to continue usage. The other reasons for discontinuation / non-use include various misconceptions surrounding iodised salt use. The arguments given in favour of non-usage are that it should not be used by healthy people. Some feel that those who have goitre should use it while others think that it contains family planning medicines or it will cause goitre.

Table 2 shows that the mass media has been very effective in informing the people about iodised salt, on the other hand the role of the health personnel in educating the people has been minimal. Out of the 189 respondents who had heard of iodised salt only 7.5% claimed to have obtained this information from the health staff. Since the health rationale of taking the iodised salt does not seem to have been, clearly highlighted utilisation of the salt remains low. Information education and interpersonal communication is seen to be one of the most important areas, which is usually neglected. Many programmes in the past have introduced iodine supplementation measures without educating the target group or other involved parties about the importance of iodine deficiency disorders and their correction. Such unexplained interventions may meet with indifference or resistance and frequently can not be sustained[2].

The survey clearly demonstrates the need for stronger education of the people adopting the various available methods of interpersonal communication.

The survey shows that the there is an extensive need for health education to be imparted by the personnel of the health department since messages emanating from qualified practitioners gain wider credence compared to lay people. The public needs to be educated about the various disorders that result from iodine deficiency. The

necessity for the regular intake of iodised salt must also be explained. It should be clarified that the salt has long term benefits, which cannot be appreciated over a short period. The negative propaganda associated with iodised salt must be countered by pragmatic arguments. During patient visits, doctors nurses and other health auxiliaries can extol the multifaceted benefits of iodised salt while concurrently allaying ill-founded misconceptions. Involvement of the Lady Health workers can be helpful in targeting rural communities. The other personnel could include traditional birth attendants vaccina-tors sanitary inspectors, medical technicians and dispensers.

It is important that the health workers must also be sensitised to the garvity of the problem and be trained in the latest interpersonal communication skills.

The target group who are to be addressed include the general populace, including religious leaders, social workers, village elders, elected representatives, teachers, school children and members of various non governmental organisations. An important advocacy group could be those patients who are afflicted with iodine deficiency disorders. It they are made to understand the link between their condition and the relationship of iodine salt intake, they themselves can act as potent educators. The messages that are to be conveyed must be tailored to the level of understanding and education of the target group. It should be taken care that the messages are in accordance to the values and traditions of the people.

The methodology for the rural areas could include door to door visits by the health workers, arranging village meetings to be addressed by the village leaders, organisation of special camps and production of leaflets and booklets for distribution. In schools, students can participate in special plays and dramas highlighting the importance of the topic. Religious leaders during their sermons can explain the benefits of the fortified salt. Special goitre identification and management camps can be organised in the villages regularly. The purpose of these camps should be to identify those who may be having enlarged thyroid glands and providing them with proper counselling regarding management including preventive methods for the rest of the family. In the urban areas, it is seen that the health facilities including hospital departments can provide a useful setting for the delivery of such messages. The health personnel must be actively involved in the teaching counselling and monitoring of the programme activities.

Finally, if the national programme has to provide sustainable services, it is necessary that there should be an in built monitoring and evaluation mechanism to judge utilisation pattern. Epidemiological surveys conducted regularly to assess thyroid enlargement and serum TSH estimation at regular intervals along with KAP surveys regarding iodine salt utilisation can be effective tools to gauge programme effectiveness.

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DEVELOPMENT OF A SEXUALLY TRANSMITTED INFECTIONS PREVENTION AND CONTROL PROGRAM FOR PAKISTAN

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Introduction

With special emphasis being paid generally to infectious diseases and particularly to sexually transmitted infections including HIV / AIDS internationally, the need for developing countries to start prevention and control programs should also be considered. Pakistan is a developing country and needs special attention regarding the prevention of sexually transmitted infections, which form an important part of the infectious disease burden in the country. A country wide study on the prevalence of sexually transmitted infections has not yet been conducted but physicians working at the primary level have occasionally reported suspected cases of STI's.

It is important to recognize that many aspects of the STI control model of specialized treatment and referral centers developed in industrialized countries may not be appropriate, feasible or transferable to many resource-poor settings like that of Pakistan. In Pakistan the patients, particularly males, commonly seek STI treatment outside the formal sector and STI's are treated along with a multitude of other health problems by primary health-care workers who have received little or no specific training in STI diagnosis and management.

In addition, STI control in these settings must compete for resources with other important and less stigmatized health problems. Although funding for STI control has increased as a result of HIV / AIDS control programs, resources are still inadequate and health infrastructures remain weak. Given the urgency of the task at hand, more innovative approaches must be developed and implemented.

Key Concept In Effective Management of STI's

In designing interventions that will have the greatest public health impact, the concepts of targeting, improved treatment-seeking behavior and effective treatment at the point of first encounter is the key to an effective program. The reason for these strategic concepts and the program issues that arise in operationalizing them are discussed below.

Targeting Risk Groups

Not all members of a population are at equal risk for acquiring or transmitting STIs. Relatively small groups of community members known epidemiologically as "core groups" or "high frequency transmitters" are responsible for sustaining and perpetuating the spread of STIs in a community[1-4]. Targeting limited resources to these priority groups will have a much greater impact on STI prevalence in a community than programs aimed at the general population[5].

The challenges in making this concept operational are twofold. First, it may be difficult to identify and access these core groups. Second, it is important not to stigmatize or cast them out while they are receiving prevention and care services. Although behavioral, ethnographic and epidemiologic surveys defining these core groups are often lacking, experience has shown that sex workers and their clients, people working away from home (e.g., migrant workers, long-distance truck drivers and military personnel) and youth often have high rates of STI infection in developing as well as developed countries. In addition, urban populations generally have a higher prevalence of STI infections than rural populations.

Treatment-Seeking Behavior

In many developing countries, the point of first encounter for STI self-medication and treatment is in the informal health sector. Over the counter purchase of antibiotics at pharmacies (drugstores

or chemist shops) or from drug vendors and quacks (unlicensed / non qualified health practitioners) is almost universal despite laws that regulate their distribution. The treatment obtained from these sources is frequently inadequate or ineffective, patients do not receive the benefit of prevention education including condom advice and their sexual partners are not referred or treated.

In Cameroon, a survey of men leaving pharmacies found that only 9 percent of men in Douala and 15 percent of men in Yaound received their prescription from a medical doctor.6 The majority received their prescriptions from pharmacies, 38 percent and 54 percent, respectively. Pharmacists were the source of the prescription in 7 percent and 9 percent of the cases, respectively. The next most common source of advice was from friends, family or self, 46 percent and 21 percent, respectively. A total of 50 percent to 75 percent of the patients were treated incorrectly. The more "medical" the initial visit the higher was the cost of prescribed treatment.

It can be argued that in most developing countries, STI patients are not likely to receive more effective or comprehensive management in the formal clinic sector. This is generally due to scarce resources, limited provider training and the demands of patient flow and / or profit that often preclude any prevention education.

Although much research is needed on the determinants of STI care-seeking behavior, a number of barriers exist to seeking care in the formal sector. These include the following: the cost of long waiting times and return visits required for laboratory results; treatment failures and return visits to get drug; the cost of transportation, consultation fees, laboratory tests and prescriptions; and the social implications of being seen in an STI clinic where staff are often judgmental, and privacy and confidentiality are often lacking.

These financial and social barriers apply particularly to women, and improving their access to and use of STI services is a major challenge in STI control. There is a low specificity or absence of clinical manifestations when women are infected with an STI[7]. A large number of women do not recognize some STI symptoms as abnormal[8,9]. Finally, diagnostic tests for reproductive tract infections are not readily accessible every where.

Effective Manngement at the First Encounter

A patient's first encounter with the health-care system may be the only contact, and it is likely to affect future treatment-seeking behavior, partner treatment and the treatment's cost-effectiveness. Therefore, STI management at that initial point should be as comprehensive and effective as possible. This first encounter might be in the public or private sector, in the formal or informal sector, at a central specialized clinic or a peripheral primary health-care clinic such as a maternal child health (MCH) or a family planning (FP) clinic.

Most of these providers do not have access to adequate examination or laboratory facilities. The use of standardized flowcharts based on the syndrome management approach will enable them to make a diagnosis and manage the patient effectively. Key issues in improved care, include the availability of effective drugs, provider attitudes toward patients, privacy and confidentiality issues, provision of prevention services (condoms, education about risk reduction and therapy, and partner referral) and curative services.

Conculsion

While designing a sexually transmitted infections prevention and control program all the above mentioned things should be considered and such a program should incorporate specialized short training courses regarding proper diagnosis and treatment of STI's to primary health care providers alongith a public awareness program. New clinics in the private sector or departments in public sector hospitals related to STI's need not be opened. The need is to use the already existing health providers and facilities like general practitioners, gynecologists and obstetricians, maternal and child health clinics and family planning clinics.

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ASSESSMENT OF DISASTER PATIENT MANAGEMENT AT THE EMERGENCY WARD OF THE MAYO HOSPITAL

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Summary

In this study we have tried to assess the existing management system for disaster victims at Mayo Hospital Lahore (looking at the victims from bomb blast at Bhai Pheru, Sheikupura and Shaukat Khaunum Memorial Hospital, Lahore) and tried to conclude the deficiencies and flaws in the present system. This study was conducted at the emergency ward of Mayo Hospital by looking at the official records, personal observation, physical facilities and acquiring information by questionnaire. All the twenty doctors who attended bomb blast disaster patients at emergency department were interviewed by a questionnaire. The study parameters were information and transportation systems, diagnostic and treatment facilities, blood bank services, administrative and technical staff situation. This study revealed that disaster management system at the emergency department Mayo Hospital was not satisfactory in many aspects.

Introduction

Technological disasters result from some human activity: explosions caused by humans, release of toxic chemicals or radioactive material, bridge or building collapse, fires and crashes. Technological disasters tend to involve many more casualties than natural disasters of the same magnitude of energy release. They are also much more difficult for the community to deal with and for victims to accept. The psychological factors that influence perception of technological disasters are very different from those for natural disasters. In technological disasters, there are issues of blame involved and the community spends much time discussing who was responsible and what mistakes were made. Often there are complicated lawsuits, investigations and claims for disability involved. If there was previously a feeling that the owners of the facility responsible were abusing the community or making excessive profits, this adds to the fury of the community's response. Sometimes victims are shunned by neighbors, who feel that they are exploiting the situation for personal gain or who are fearful that the response to the accident will cause economic loss to the community. As a result, technological disasters tend to divide the community and cause long lasting psychological trauma to local residents as well as to victims. In any community, hospitals play a very important role for the residents. They have a pivotal character in providing medical emergencies treatment. They function continuously and respond to emergencies at all times. Generally the hospitals are self sufficient for their internal services in a particular community, but sometimes hospitals are required to provide services to the disaster victims. To handle such situations hospitals usually have Emergency Disaster Preparedness Plans, which explains how to manage the state of affairs e.g., need of extra beds, additional surgical theater, requirement of medical and paramedical personnel trained in triage (classification of injured on site on the basis of seriousness of injury and the chances of recovery) etc. If the disaster occurred in an area that is in propinquity of the hospital than the mobile teams of medical and paramedical, with additional transport facilities can be sent to the affected area immediately for help. Actually, management of mass casualties requires better rescue techniques, first aid treatment, rapid transportation of the victims and definitive treatment of the injured.

Mayo Hospital Lahore is the biggest hospital in the province of Punjab. The emergency department of this hospital consists of 134 beds, has its own operation theater and laboratory. All the disaster victims (bomb / trains etc.) from Lahore nearby areas of the surrounding districts are accommodated in by this emergency department. In this study we have tried to assess the existing management system for disaster victims at Mayo Hospital Lahore (looking at the victims from bomb blast at Bhai Pheru, Sheikhupura and Khanum Memorial Hospital, Lahore) and tried to conclude the deficiencies and flaws in the present system.

Materials and Methods

Mayo Hospital was selected, because it is the biggest hospital of the province and is providing medical care to the people of Lahore and the province of the Punjab in general. This is 1799 bedded teaching hospital attached with King Edward Medical College, Lahore.

This study was conducted at the emergency ward of Mayo Hospital by looking at the official records, personal observation, physical facilities and acquiring information by questionnaire. All the twenty doctors who attended domb blast disaster patients at emergency department were interviewed by a questionnaire. Data was processed by hand sorting tallying method. The study parameters were information and transportation systems, diagnostic and treatment facilities, blood bank services, administrative and technical staff situation.

Results

Information System

Out of two, one telephone exchange was in working order. Only one direct telephone line was available in the Additional Medical Superintendent's office from 8 a.m. to 2 p.m. which was used for communication outside the hospital. All the 20 (100%) doctors interviewed in the emergency department were of the view that direct telephone line is available in the department, and according to 18 (90%) doctors, the intercom system (hospital internal telephone system) was working properly but 2 (10%) voted against it (Table 1). The pager and wireless systems were not present at all in the department.

Transportation System

Out of total four ambulances, three were in running condition and were not well equipped with oxygen cylinder, ventilation devices, suction facilities, defibrillators and basic emergency drugs. One ambulance was not in working condition. All the ambulances neither had wireless system nor were deputed to pick the patients from the disaster hit area. Out of 20 doctors 3 (15%) were of the view that availability of the ambulance at the emergency ward is sufficient, while 17 (85%) said that ambulances are not adequate in number. According to all the 20 (100%) doctors interviewed, the ambulance staff was not well trained to handle disaster patients and also the ambulances did not have proper equipment for the management of disaster victims (Table 2).

Diagnostic Facilities

According to the 20 (100%) doctors, a medical laboratory and x-ray plant is working round the clock. Out of 20 doctors 7 (35%) were of the view that laboratory is very well equipped and 13 (65%) were of the view that it is not very well equipped (Table 3). There were not facilities for ultrasonography and CT Scan in the emergency department.

Table 1 *Information System at the Emergency Department*

	Yes	No	Percentage (%)
Direct telephone services available at emergency ward	20 (100%)	0	100%
Pager system present	0	20 (100%)	100%
Intercom system present	18 (90%)	2 (10%)	100%
Wireless system present	0	20 (100%)	100%

Table 2 *Ambulance System at the Emergency Department*

	Yes	No	Percentage (%)
Availability of ambulance at the emergency ward	3 (15%)	17 (85%)	100%)
Availability of the proper equipment in the ambulances	0	20 (100%)	100%
Ambulance staff is well trained	0	20 (100%)	100%

Table 3 *Diagnostic Facilities*

	Yes	No	Percentage (%)
X-ray Plant	20 (100%)	0	100%
Laboratory working round the clock	20 (100%)	0	100%
Well equipped lab	7 (35%)	13 (65%)	100%

Table 4 *Treatment Facilities*

	Yes	No	Percentage (%)
Medical services provided with 05 minutes	15 (57%)	5 (25%)	100%
Availability of drugs	19 (95%)	1 (5%)	100%
Availability of drugs in the emergency cupboard	20 (100%)	0	100%
Presence of linen	19 (59%)	1 (5%)	100%

Table 5 *Blood Bank*

	Yes	No	Percentage
Working round the clock	20 (100%)	0	100%
Adequate supply of blood for the patients	17 (85%)	3 (15%)	100%
Adequate supply of blood provided in time to the patients	3 (15%)	17 (85%)	100%

Table 6 *Technical Staff*

	Yes	No	Percentage
Adequate number of medical officers	3 (15%)	17 (85%)	100%
Availability of specialist round the clock	18 (90%)	2 (10%)	100%
Adequate number of paramedical staff	3 (15%)	17 (85%)	100%
Adequate staff for post-operative care	5 (25%)	15 (75%)	100%

Table 7 *Administrative Staff*

	Yes	No	Percentage
Adequate security measure to control the crowd	2 (10%)	18 (90%)	100%
Adequate police available	19 (95%)	1 (5%)	100%
Registration and inquiry services available	20 (100%)	0	100%
Admitted patients notified in time	20 (100%)	0	100%

Treatment Facilities

17 (57%) of the doctors were of the opinion that medical services were provided within five minutes of the entry of the patient in the emergency ward, and 5 (25%) had an opinion that it is not provided in five minutes. 19 (59%) of the doctors expressed that essential drugs and linen were available in the emergency department (Table 4).

Blood Bank

20 (100%) doctors revealed that the blood bank is working round the clock. 17 (85%) said that ample supply of blood for the disaster patients was available, and 3 (15%) said the supply was not adequate 3 (15%) said that required supply of blood was provided in time to the patients and 17 (85%) did not agree to it (Table 5).

Technical Staff

3 (15%) of the doctors said that sufficient number of medical officers were working in the emergency department, whilst 17 (85%) mentioned the number is not sufficient. 18 (90%) doctors revealed that specialist doctors were available round the clock in the emergency department while the 2 (10%) said that the specialist for not available oftentimes. 3 (15%) were of the view that reasonable number of paramedical staff is present in the emergency department, but 17 (85%) voted against it. 5 (25%) doctors mentioned that reasonable number of staff is present for post-operative care, while 15 (57%) did not agree to it.

Administrative Staff

2 (10%) doctors interviewed explained that acceptable security measure were present to control the crowd in the emergency department and on the other hand 18 (90%) doctors suggested that the security measures are not satisfactory. 19 (59%) of the doctors were of the view that adequate police force is available, but 1 (5%) were not satisfied with the situation. All 20 (100%) said

that admitted disaster patients were registered and notified in time.

Conclusion

The disaster management system at the emergency department Mayo Hospital was not satisfactory in many aspects. The ambulances were not well equipped and were not used for purpose of transportation of patients from the site of disaster to the emergency department Mayo Hospital, Lahore. There was deficiency of proper information system between the ambulance staff and emergency department. No pager and wireless system was present.

Staff working at emergency department Mayo Hospital, Lahore was not trained in triage of disaster victims. Though general medical emergency care was good, and patients were provided with medical care immediately upon their arrival at the hospital. Supply of drugs to the victims was adequate.

Registration service was very efficient and patients were also notified in time. Some cash money is always present in the emergency department Mayo Hospital for patients affected by disasters, though this amount is very minimal, but it is remunerated instantaneously.

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THE OPTIMUM DOSE OF SUBARACHNOID "ABOCAINE SPINAL" FOR ELECTIVE CAESAREAN SECTION UNDER SPINAL ANAESTHESIA

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Summary

In this prospective study, we compared the effectiveness of different doses of heavy bupivacaine (Abocaine spinal) in patients undergoing elective caesarean section under spinal anaesthesia. The aim was to find out most suitable dose of the drug for average Pakistani population undergoing elective caesarean section 160 patients were randomly allocated to receive a subarachnoid dose of 1.2 ml (Group 1), 1.4 ml (Group 2), 1.6 ml (Group 3) or 1.8 ml (Group 4) of the drug. There was no statistically significant difference in height of block, fall in blood pressure, change in heart rate 4 or the disease of ephedrine to treat hypotension. There was a significant difference in the intraoperative condition of patients in group 3 ($p < 0.05$) and group 4 ($p < 0.01$) as compared with group 1. It was concluded that a dose of 1.6 ml to 1.8 ml provides better operating conditions with least incidence of discomfort in patients undergoing elective caesarean section under spinal anaesthesia with Abocaine spinal.

Introduction

Spinal Anaesthesia in obstetrics provides effective pain relief for surgery and avoids maternal central nervous system depression associated with general anaesthesia[1]. The incidence of caesarean section has increased to about 25% of births in developed countries due to safety of the procedure produced by the anaesthetic techniques. Spinal Anaesthesia if properly administered provides nearly ideal operating conditions[2]. Reasons of its popularity includes easy administration, rapid onset, better Apgar score of baby, low incidence of pulmonary complications, less blood loss, no effect on uterine tone, minimal upset of body chemistry and no immediate post operative pain[1,2-6]. Moreover spinal anaesthesia is very cheap method of anaesthesia and it is very useful and life saving in failed endotracheal intubation during emergency caesarean section which is not very uncommon in anaesthetic practice.

Pregnancy is associated with certain physiological changes in the body which are marked in the last trimester. The dosage of spinally administered drugs also need to be decreased due to these changes[7,8]. There is lot of discrepancy in the literature as for as doses of subarachnoid Bupervacaine is concerned[3-5,8-18] which might be due to demographic variations and other factors affecting dosage and level of anaesthesia.

The aim of this study was to find a dose of subarachnoid heavy Bupivacaine 7.5% with 8.25% glucose (Abocaine spinal), suitable for our population, in patients undergoing elective caesarean section, with minimal side effects and patient's discomfort.

Material and Methods

We studied 160 ASA I and II parturients at term (37-41 weeks gestation) undergoing elective caesarean section under spinal anaesthesia. All the patients were with uncomplicated singleton pregnancy scheduled for elective surgery due to breech presentation, cephalopelvic disproportion or repeat caesarean section. Exclusion criteria

were multiple gestation, fetal and maternal complications and contraindications to spinal anaesthesia. Patients who were less then 60 Kg or more then 90 Kg in weight were excluded. Similarly, patients with height less then 150 cm or more then 170 cm were also excluded. Written informed consent was taken from each patient.

All the patients were fasting for six hours and no intravenous fluid was given. All of them received oral Ranitidine 150 mg. tab. on the evening before surgery and another tab. in the morning on the operation day with a sip of water. In addition, 30 ml. syrup Simeco was also given before shifting the patient to operation room. Inj. Ringer's lactate 1000 ml was given i.v. over fifteen minutes before anaesthesia. Patients were placed on a horizontal table. Under aseptic conditions, spinal anaesthesia was administered in L3-L4 interspace with a 25 gauge spinal needle by midline approach. The needle was inserted with bevel initially facing laterally and after passing dura matter, rotated to face bevel upwards. The correct position of needle was confirmed by aspiration of 0.2 ml of CSF.

The patients were allocated randomly to four groups to receive 1.2 ml (Group 1), 1.4 ml (Group 2), 1.6 ml (Group 3) and 1.8 ml (Group 4) of Abocaine spinal in subarachnoid space, over 10 seconds without barbotage and patient turned supine. Operating table was turned to 10 degree left lateral tilt and uterus was also displaced manually to the left side. No attempt was made to influence the level of anaesthesia by positioning the operating table.

Level of analgesia was assessed by pinprick bilaterally at 5, 10 and 15 minutes after spinal injection and at the end of operation. If the analgesic level differed on both sides, the average value was used for analysis. Modified Bromage scale[19] was used to assess motor block: (0 = no paralysis; 1 = inability to raise extended leg; 2 = inability to flex the knees; 3 = inability to flex the ankle or total paralysis) at the intervals mentioned above. Patients were asked repeatedly for any discomfort, unpleasant feeling or pain.

Quality of block was assessed as follows: (a) excellent, no complaints; (b) mild discomfort, requiring no supplementary analgesia; (c) intermittent discomfort and mild pain settling with 5-10 mg. i.v nalbuphine; (d) severe discomfort accompanied by nausea, requiring antiemetics and 50% nitrous oxide in oxygen; (e) failed, requiring general anaesthesia. All the assessment were performed by a second anaesthetist unaware of the dose injected.

ECG and oxygen saturation were monitored continuously and non invasive blood pressure at two minutes interval before delivery of baby and at five minuets interval after delivery with Colin 306 BP monitor. Ringer's lactate solution was injected at the rate of one litre per 30 minuets throughout surgery. Prophylactic ephedrine 10 mg i.v. was also given to all patients immediately after spinal injection to prevent hypotension and 10 mg i.v. if systolic blood pressure dropped to 100 mm Hg or below.

Data was analyzed statistically by using t test and Chi-squared test and $p < 0.05$ was considered significant.

Results

There was no significant difference between the four groups in age, height, weight or gestational age (Table 1).

Table 1 *Demographic data (Mean and Range). No significant difference.*

	Group 1 n = 40	Group 2 n = 40	Group 3 n = 40	Group 4 n = 40
Age (years)	31 (21-37)	28 (20-39)	29 (22-36)	32 (22-39)
Height (cm)	158 (151-165)	156 (152-161)	153 (150-166)	154 (152-160)
Weight (Kg)	69 (63-78)	65 (60-73)	70 (62-89)	66 (65-76)
Gestational age (weeks)	37 (37-40)	38 (37-41)	37.5 (37-40)	38 (37-40)

There was no significant difference in the systolic and diastolic blood pressure, heart rate and dose of Ephedrine to treat hypotension (Table 2).

Table 2 *Maximum spread of Analgesia and Hemodynamic parameters (Mean and Range). No significant difference.*

	Group 1 n = 40	Group 2 n = 40	Group 3 n = 40	Group 4 n = 40
Height of block	T_5 (T_4 - T_6)	T_5 (T_3 - T_6)	T_4 (T_2 - T_6)	T_4 (T_2 - T_5)
Decrease in Systolic Blood Pressure) (% of baseline)	-28	-24	-24	-25
Decrease in Diastolic Blood Pressure) (% of baseline)	-28	-32	-33	-33
Change in Heart rate (% of baseline)	+12	+15	+14	+05
Ephedrine dose on average (mg)	15	15	20	20

The average level of block was not significantly different in all the groups (Table 2). There was a statistically significant difference in the quality of analgesia between group 1 and other three groups (Table 3). However, there was no statistically significant difference between groups 2, 3 and 4. The incidence of discomfort at the time of exteriorization of uterus was lowest in group 4.

Table 3 *Quality of intraoperative condition.*
(*) Shows $p < 0.05$ compared with Group 1
(**) Shows $P < 0.01$ compared with group 1

	Group 1 n = 40	* Group 2 n = 40	Group 3 n = 40	** Group 4 n = 40
Excellent	08	21	25	34
Mild discomfort	05	09	08	05
Intermediate discomfort	19	06	06	01
Severe discomfort	08	04	01	0
Failed	0	0	0	0

Discussion

We have found that the optimum dose of subarachnoid Abocaine spinal to get excellent level of analgesia for caesarean section is between 1.6 ml-1.8 ml for our average population. There is a statistically significant difference in the quality of anaesthesia between group 1 and group 3 ($p < 0.05$) or group 4 ($p < 0.01$) which shows that the subarachnoid dose of Abocaine spinal 1.2 ml (group 1) is inadequate. It is generally accepted that a block upto T_4 is adequate for caesarean section[7,13,15]. Although dermatomal levels of analgesia are almost same in all the groups, there is a significant difference in the quality of analgesia. The difference in quality is due to visceral pain which is slightly different from somatic pain. Visceral pain is a dull, poorly localized pain and appears to originate from deeper sites of the body. If visceral sensations remain, they may be described as heaviness, squeezing or an unpleasant feeling, which is often accompanied by nausea and vomiting[20-23]. The episode of visceral pain is most common at the time of exteriorization of uterus, which may be a very vital step in certain surgical situations. Visceral pain is transmitted by unmyelinated C fibers. It is postulated recently that with the

declining concentration of local anaesthetics in the CSF, unmyelinated C fibers may become unblocked, although conduction in myelinated A delta fibers transmitting incisional pain has not been restored[21]. There is a slight difference in the quality of anaesthesia in group 3 and group 4 which suggest that a slightly higher dose of Abocaine spinal is preferable for caesarean section since it has not increased level of block.

This study has been performed on average population as far as height and weight is concerned. Increasing the dose of bupivacaine (Abocaine spinal) from 1.2 ml to 1.8 ml has not increased the height of sensory block, but improved the quality. Therefore, it is recommended that a dose of 1.6 ml or 1.8 ml of Abocaine spinal should be used for caesarean section under spinal anaesthesia to get best operating conditions.

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STUDYING THE TIME UTILIZATION OF PHYSICIANS AT RURAL HEALTH FACILITIES

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Summary

This study was conducted with objective to find out how the time is utilized by physician at the rural heath facilities. 31 doctors working at 15 rural heath facilities, selected by non-random method, in Faisalabad district of Pakistan were observed for one week during their routine work with the help of 15 observers. It was found that 60.94% of time was spent on the non-productive activities while 39.16% was spent on the productive / health related activities by the physicians working in the rural areas. Out of the time spent on productive / professional work, proportion of time spent on curative work was found to be 79.85%, on administrative activities 11.69%, while only 4.26% of the productive time is spent on the preventive work by the physicians. Similarly it was found that actual time spent by the doctors at their duty place is 51.80%, i.e. they spend 48.20% of the time away from their duty place. It is recommended that the concerned supervisory officers may be appraised of the situation; there should be more comprehensive (strict and supportive) supervision at the rural health facilities. In this regard necessary training(s) may be arranged for the supervisory staff to enhance their skills and capabilities. It is also recommended to carry out in depth evaluation of the problem to confirm the findings of this study and to enable policy makers to take corrective measures on more wide and comprehensive data.

Introduction

Evaluation of health care has rapidly developed over last 30 years. One of the factors which has stimulated the move towards evaluation has been growing awareness of scarcity of resources for health sector, especially in developing countries. In order to provide the best services within these financial constraints, it has become necessary to assess whether the resources are being used effectively and efficiently.

In Pakistan, about 67.60% of population resides in the rural areas[1], where basic health units (BHUs) and rural health centers (RHCs) are key facilities for provision of health care. At both these facilities, doctors are responsible for providing health care to the people. Unfortunately, the physicians tend to remain absent from their duties at these places[2]. Those who are present, do not attend to their duties for the required working hours. This study was conducted with objective to find out how the time is utilized by the primary care physician at the RHCs and BHUs.

Materials and Methods

Three methodologies; retrospective calls, activity sampling technique and work sampling technique are commonly used to obtain information about time allocation. This study was conducted by Activity sampling technique[3], which has been used by Bryant M et al[4] when he looked at similar issue at Cameroon for Measuring time utilization in 20 rural health centers. Activity sampling technique is a method of direct measurement which involves making instantaneous observation of activities a staff member is engaged in over a defined time, and has

been used in similar other studies in developing countries[5,6]. A checklist developed by Bryant et al was used for this study with source modifications. A non-random sample of 15 rural heath facilities of Faisalabad district was taken, which included 7 rural health centers and 8 basic health units. (two woman medical officers and two dental surgeons were on long leave, while post of one woman medical officer was vacant, hence these were not included in the study) 31 doctors (they comprised a sample of 15% of the total study populations) of 15 health facilities including medical officers, women medical officers and dental surgeons were observed for one week each, during their routine work with the help of 15 observers.

Each day the major activities carried out by the medical officer were noted and recorded at 15 minutes interval totaling 24 observations throughout the day (8.15 am to 2.00 pm) The work observed with the help of a checklist, in which the work was classified according to the predefined classification of activities. Results were expressed as percentage of total time available which was utilized for various activities by the medical officers of these facilities. Analysis of results was done manually.

Findings

A total of 4,304 observations were made of 31 doctors at 15 health facilities (8 BHUs and 7 RHCs) of the rural areas of Faisalabad. Table 1 shows the actual number of observations made for different activities of the primary health care physicians.

Table 1 *Number of observations for various activities*

Activity	Classification	No. of Observations
1. Curative Work		
(a) Examination of Patient; BP, Pulse Temperature	1A	1252
(b) Minor Surgery e.g. I/D of boil etc.	1B	93
2. Administration		
(a) Official letters / Dak	2A	40
(b) Meeting with staff of center	2B	59
(c) Meeting with supervisory staff e.g. DDHO,DHO at center	2C	22
(d) Meeting with community representative or complainant	2D	23
(e) Visiting DHO/DHS office	2E	53
3. Preventive/Promotive/ Health education activities		
(a) Teaching LHWs	3A	45
(b) Field visits e.g. checking of EPI work	3B	22
4. Other activities		
(a) Checking medical store of center	4A	48
(b) performing medicolegal work	4B	24
(c) waiting for patient	4C	341
(d) Attending law courts	4D	72
5. Non-Productive Activities		
(a) Friends / social visits	5A	120
(b) Tea break / refreshments	5B	141
(c) Absence		
1. Explained absence e.g. casual leave, general duty	5C1	339
2. Unexplained absence	5C2	1610
Total observation of various activities		4304

It was found that was observed that 60.94 % of time was spent on the non-productive activities, while of while 39.16% was spent on the productive / health related activities by the medical officers working in rural areas of Faisalabad. Similarly 31.25% of time was spent on curative work, 4.58% on the administrative work, 1.56% on preventive work while 1.67% on the other productive activities.

Similarly it was found that actual time spent by the doctors at their duty place is 51.80%, (excluding 9.6% of the time out of 60.90% non-productive time spent on the waiting for the patients and attending the law courts) i.e they spend 48.20% of the time away from their duty place

Table 2 shows the proportion of time utilized for major activities along with the percentage.

Table 2 *Proportion of time utilized in various activities*

Activity	No of Observations	%Age of Total Observations
Curative	1,345	31.25
Administration	197	4.58
Preventive / Promotive / Productive	67	1.56
Other Activities (4A + 4B)	72	1.67
Non-Productive Plus (4C + 4D)	2623	60.94
Total	4304	100

These values are graphically represented in the pie chart in the Figure 1.

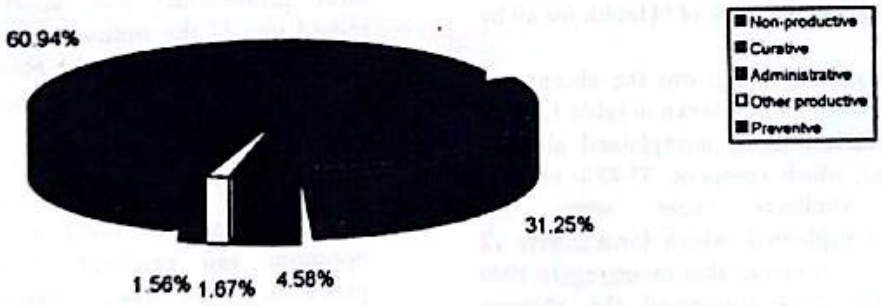

Figure 1: Proportion of time utilized in various activities

Discussion

Study reveals that 60.94% of time is spent on the non-productive activities while only 39.16% is spent on the productive / health related activities by physician working in rural areas of Faisalabad. These figures are highly objectionable and unacceptable. It shows heavy loss of resources which become even more important in the context of scarcity of resources for the developing country like Pakistan. It is interesting to note, however, that these figures are comparable to the study conducted by Bryant M et al[7] in Cameroon, who found that 73% of time was spent by the health workers on non-productive activities. Similarly Desai P et al found that time utilized by medical officers and dentists on productive activities was 37%, while 63% of their time was spent on the non-productive activities[8].

Out of the time spent on productive / professional work, proportion of time spent on curative work is 80.01% (31.25% of 39.16%), administrative activities utilize 11.72% (4.58% of 39.16%), 4.28% (1.67% of 39.16%) on other productive activities while only 3.99% (1.56% of 39.16%) of the productive time is spent on the preventive work by the physicians.

The time spent on the preventive work may be compared with the findings of Bryant et al[9] who found that only 0.8% of time was spent on the preventive activities by the health workers. It

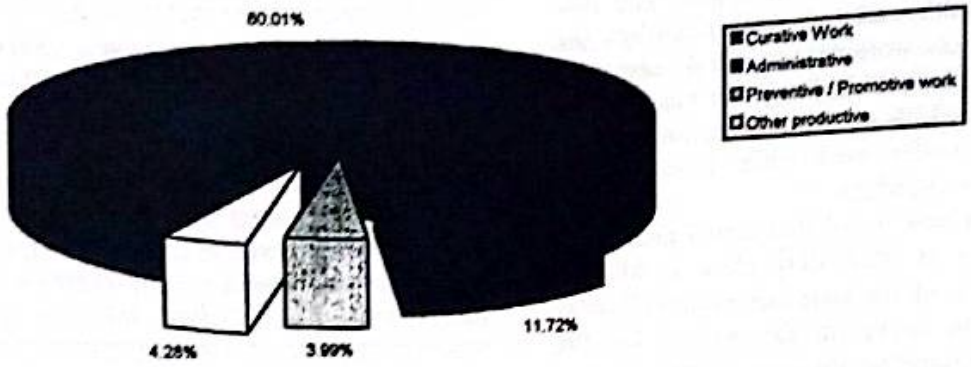

Figure 2: Distribution of the Productive time to different activities

means that preventive and health promotion activities rank very low on the priority of primary health care physicians and health workers. These are however, essential and substantial component of primary health care and have achieved special attention in achieving the goal of "Health for all by the year 2000"[10].

Another alarming aspect was the absence of doctors from the duties. As shown in table 1, there were 1610 observations of unexplained absence from the duties, which comprise 37.40% of total observations. Similarly there were 339 observations of explained, which form 7.88% of total observations. It means that in aggregate 1949 observations (45.28%) comprised the absence from the duties, which is again a very high figure. This figure should be interpreted in the context that for this study those rural health facilities were selected, where good attendance was expected, so that to make the observations purposeful. This figure also confirms the finding of the study of absenteeism of doctors working in Lahore Division, Pakistan where only 34.70% doctors were found present on any typical working day[11].

Recommendations

1. It is recommended to carry out in depth evaluation of this problem so that the policy decisions may be taken on broader findings.
2. The supervisory staff of health department (Deputy District Health Officers, District Health Officers, Directors Health Services and Director General Health Services may be appraised of the situation. They may be asked to make the supervision at rural health facilities more strict as regards the performance of the work by the doctors.
3. It is also suggested to make the supervision more professional and supportive. In this regard one of the option may be to arrange training workshop(s) on the Human Resource Management at the Institutions like Institute of Public Health, Lahore. The purpose of the workshop(s) may be two folds; to learn the methods of supportive and systematic supervision on one hand, and to find the optimum and practical solutions of the problems by the stake holders / key players with the discussions of academicians on the other hand.

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THE BATTERED CHILD

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The battered child refers to an infant usually under 3 years of age who suffers repeated non accidental injuries, some times fatal caused through episodes of violence by a parent or guardian[1].

The following case report describes a fatal case of battered child recently seen in the autopsy section, Department of Forensic Medicine, K. E. Medical College, Lahore. The dead body of female child 4 years age was brought to the mortuary. The information furnished by the police about cause of death was "by violence". The FIR and the family history as taken from the person accompanying the deceased revealed severe marital discord between the father and mother and that the child was unwanted and unacceptable to the father as being female and ugly. The explanation of recent incident as given by the father was slapping during a teaching lesson.

In the mortuary during the autopsy following observations were made 48 hours after death; dead body of female child age about four years, length 106 cm. wt. 15 kg., built average, clothes not significant, eyes closed, mouth semi open, no forth, no petechial spots seen in the skin of face, neck or in the conjunctive. Post mortum staining was faintly developed at the back in between the areas of contact flattening, body was showing cold stiffening (due to freezing), no sign of putrification was present.

A large number of bruises of various age and size were present wide spread on the body. This distribution of external injuries was as follows:

Distribution of External Injuries

Head and Face

S. No.	Site	Injury	Characteristics	Duration
1.	Upper lip	Bruise	Reddish Brown Colour	Within 36-48 hours
2.	Lower lip	Bruise	Reddish Brown Colour	Within 12-24 hours
3.	Chin	Bruise	Reddish Colour	Within 12-24 hours
4.	Scalp	Bruise	Present on the under surface, over both parietal bones	Within 12-24 hours

Trunk and Limbs

S. No.	Site	Injury	Characteristics	Duration
1.	Epigastrium	Bruise	Brownish black colour	Within 48 hours
2.	Upper limbs	Bruise	Purplish black colour muscle deep	Within 36 hours
3.	Hand	Bruise	Brownish colour	Within 48 hours
4.	Elbow joint	Bruise	Purplish black colour, muscle deep	Within 36 hours
5.	Fore arm	Bruise	Reddish purple colour	Within 24-36 hours
6.	Leg and thigh	Bruise	Purplish red colour, muscle deep	Within 12-24 hours
7.	Fingers	Burns	Scabbed, evidence of antiseptic being applied	3-5 days

Internal Injuries on Dissection of the Body

1.	Membranes and brain	Congested, sub dural haematoma over both parietal regions, size approx 30 cc.
2.	Hamstring and calf muscles	Bruised, swollen, showing fluid and clotted blood on dissection.
3.	Blood vessel	Deep leg vein showing ante mortum thrombus on right side.
4.	Heart	Embolus present in right atrium, right ventricle and pulmonary trunk.

Rest of the internal organs of the body as the skeletal system on dissection and total body radiograph were healthy and did not show any evidence of trauma or pathology. Histopathology and toxicological studies were not performed. The cause of death in this case was extensive blunt trauma to the body, leading to haemorrhage, shock and complication of thromboembolism; also present was injury to the vital area, i.e., brain in the form of subdural haematoma. These causes are sufficient to lead to the death of a person in an ordinary course of nature individually and in combination.

Discussion

Non accidental parental injuries to the small children are by no means an uncommon occurrence in the medical field now. Firstly described by American Radiologist J. Caffey in 1946 the battered baby syndrome is now in the position of a newly recognised clinical and pathological entity. The age of the battered child is almost always below 3 years with a peak incidence at the age of 15 months, males show a slightly increased predisposition as compared to the female. Child is most commonly the first born or some times the youngest offspring in the family. Features of battering comprises of repeated episodes / attacks of violence the most recent of which results in death or severe trauma requiring hospitalisation. A definite pattern of injuries is usually seen. External injuries being multiple, in the form of soft tissue lesion of bruises, abrasions, lacerations, and scalds or burns[2]. Skeletal injuries consist of fracture dislocations, separations of epiphysis[3], elevation of periosteum chipping of corners of epiphysis, knobbing fractures of ribs and indented fractures of the skull. Fractures show different stages of healing and callous formation

on radiological examination thereby indicating the time of incidence. Injuries of the eyes are also commonly seen[4]. Cause of death in fatal cases is most commonly injury to the vital organ, i.e., brain, subdural haematoma being the commonest cause among the head injury. Injury to the abdominal organs leading to the laceration of viscera and haemoperitonium are the next[5,6]. Dry flame burns and scalds are also reported frequently.

In clinical situation the duty of correct diagnosis lies with the doctor who should have low threshold of suspicion in every case of paediatric trauma specifically if the history is inconsistent and delay in seeking medical treatment after injury is present. It is a preventable condition requiring accurate diagnosis, recognition of stress, Psychiatric factors, alcoholic and norcotic abuse in parents and their effective and timely remedy.

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