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CONTENTS

Child Labor Abuse in Pakistan	1
Ms. Maria	
Comparative evaluation of Cardiac Markers (CK-MB and SGOT)	8
(Used in diagnosis of patients with Acute Myocardial Infarction)	
Noor Fatima, Muhammad Azam Gill, Muhammad Ahsan Pervez	
Spontaneous Vaginal Delivery After a Previous	13
Lower Segment Caesarean Section	
Binyameen	
Evaluation of Health Hazards among Traffic Policemen.....	16
Working in the Busy Road Crossings of Lahore	
Nargis Rehana Malik, Khurram Ahmed Faridi	
Incidence of Neonatal Tetanus (N.T.) Among the Neonates	19
With Special Reference to Sex Distribution, Maternal Immunization	
and Socioeconomic Factors, Admitted In Paediatric Ward At	
Allied Hospital, Faisalabad, Pakistan During 2000 – 2002	
Dr. Zahid Masood Kham, Dr. Jawad Husain, Ms. Salma Hameed,	
Ms. Uzma Afzal, Ms. Rahat Kalsoom, Ms. Amna Adil, Ms. Asma Tariq, Ms. Iram Naz	
Fetal Outcome in Diabetic Mothers	25
Binyameen	
Evaluation of Health Hazards of Metallic Press Workers.....	29
Working in Shahdara Industrial Area	
Nargis Rehana Malik	
Development of Pre-Coded Pregnancy	32
Monitoring Card for use in Teaching Hospitals	
Musarrat Mansoor, Zubair Ahmed, Muhammad Saeed	
The Study of Feeding Practice of Mothers to	35
Their Children Aged 4-12 Months, District Layyah, Punjab	
Syed Sakhawat Ali, Khurram Ahmed Faridi	



Editorial:

This article was received by the editor in 2004 and it is published in this journal as an editorial keeping the importance of issue in view. It is included in this issue of the journal to open a discussion and comments from the worthy learned readers on this very topic. All of the comments will be accepted, published and appreciated for the further highlighting of this matter. The child labor is becoming a hot topic in the field of occupational health as well as public health. It has become or made to become a stigma in various industries of Pakistan. It was used to impose the sanctions on various trades of Pakistan in the international market. It is therefore imperative to give the actual picture of this public health problem in the industries of Pakistan and to try its eradication.

Editor

Child Labor Abuse in Pakistan

Ms. Maria
Institute of Public Administration
University of the Punjab, Lahore

What is Child Labor?

Child Labor is now a very emotional term in society. It is generally referred to any economic activity performed by a person who is under the age of 15. However, Child Labor in the context it is applied in many quarters is not the frivolous tasks, which a child does after school hours or helping out in a family enterprise or farm. It also does not involve the rightful apprenticeship opportunities which young people utilize or which are offered to them. Rather, Child Labor in today's context is that employment which prevents a child from attending institutions of learning, and at the same time it also refers to the person who toils in working conditions, which are deemed as hazardous to the physical and mental health of the child.

Child Labor is one issue, which has been of grave concern to the employers, the workers, the government, the news media, the various NGOs, and most of all, the parents and their children. Every country has taken steps to formulate practical programs to achieve the desired objectives, i.e., elimination of Child Labor. However, this is commensurate with the seriousness shown by the decision makers, the removal of hurdles, especially the bureaucratic red tape, the employers' eagerness to substitute working children with adults, and the dedication to implement and enforce the guidelines of the programme for the elimination of Child Labor. Child labor is work that harms children or keeps them away from attending the school.

Child Labor In Pakistan:

Pakistan has recently passed laws greatly limiting child labor and indentured servitude -- but those laws are universally ignored, and some 11 million children, aged four to fourteen, keep that country's factories operating, often working in brutal and squalid conditions

Child labor is an institution throughout the Third World, and its incidence has been increasing in countries that are usually described as advanced. The worldwide population of children fewer than fourteen who work full-time is thought to exceed 200 million. But few countries have done less to abolish or to contain the practice than Pakistan. And fewer still have a ruling class that opposes workplace reform and human rights initiatives as vigorously. Given its relative prosperity, its constitutional prohibition against child labor, and its leaders' signatures on every UN human- and child-rights convention, Pakistan's de facto dependency on child labor is troubling and to its critics inexcusable.

In Action Speaks Louder than Words, says I. A. Rehman, the director of the HRCP "This government is in continuous violation of the Convention on the Rights of the Child, and has consistently refused to enforce those very laws it enacted to protect its most vulnerable citizens. We have far more in the way of resources and legal remedies than China, India, and Indonesia, and we do far less for our young than they. The

problem is lack of political will and is multiplied by greed."

The median age of children now entering the Pakistani work force is seven. Two years ago it was eight. Two years from now it may be six. In the lowest casts, children become laborers almost as soon. Toddlers, yoked teams of three-, four-, and five-year-olds who plough, seed, and clean fields from dawn to dusk as they can walk work much of the nation's farmland.

"Children are cheaper to run than tractors and smarter than oxen," explains one Rawalpindi landowner. He prefers field hands between seven and ten years old, "because they have the most energy, although they lack discipline."

The Child Labor issue gained notoriety and intensification in Pakistan after the news of Child Labor "exploitation" in carpet industry was highlighted on international forum. Much was made of the nimble fingers working the looms in unsanitary and inhumane conditions, in an atmosphere of abusiveness, and in an environment where pay is meager, where the workload is extensive, and where the health and safety standards are just pipe-dreams. There were reports galore of the harsh punishment meted out to young children when output was below targets. The general impression was that the children were in bondage because of the loans taken by their parents under a system known as "peshgi" (advance). The concept of education for these children was unheard of and no positive steps taken to introduce universal education for the Child Labor.

Najmuddin Najmi, the director general of the Workers Education Program, a government agency. "There's little doubt that inexpensive child labor has fueled Pakistan's economic growth. Entire industries have relocated to Pakistan because of the abundance of cheap child labor and our lax labor laws. At the same time, child labor has hindered our industrial development, especially in the use of advanced technologies. Why should a manufacturer invest in labor-saving technology when labor-intensive mechanisms are so much cheaper?"

Example of Child Labor:

Last year, the activists in foreign countries came out vociferously against the employment of children in the sports goods industry, especially

in the city of Sialkot. The Pakistani soccer ball (football) was targeted mercilessly.

In Sporting-goods factory in the town of Sialkot, seventy miles from Lahore, where scores of children, most of them aged five to ten, produce soccer balls by hand for forty rupees, or about \$1.20, a day. The children work eighty hours a week in near-total darkness and total silence. According to the foreman, the darkness is both an economy and a precautionary measure; child-rights activists have difficulty taking photographs and gathering evidence of wrongdoing if the lighting is poor. The silence is to ensure product quality: "If the children speak, they are not giving their complete attention to the product and are liable to make errors." The children are permitted one thirty-minute meal break each day; they are punished if they take longer. They are also punished if they fall asleep, if their workbenches are sloppy, if they waste material or miscut a pattern, if they complain of mistreatment to their parents or speak to strangers outside the factory. Punishments are doled out in a storage closet at the rear of the factory. There, amid bales of wadding and leather, children are hung upside down by their knees, starved, caned, or lashed. (In the interests of economy the foreman uses a lash made from scrap soccer-ball leather.) The punishment room is a standard feature of a Pakistani factory, as common as a lunchroom at a Detroit assembly plant.

The town's other factories are no better, and many are worse. Here are brick kilns where five-year-olds work hip-deep in slurry pits, where adolescent girls stoke furnaces in 160-degree heat. Here are tanneries where nursing mothers mix vats of chemical dye, textile mills where eight-year-olds tend looms and breathe air thick with cotton dust.

PAKISTAN: 1,949 Child Workers Injured in 2002 - UNDP Report:

As many as 1,949 children suffered casualties at 200 different workplaces during the year 2002 due to hazardous nature of job and un-protective environment, says Pakistan National Human Development Report, 2003.

The report on poverty, growth and governance, which has been released by the United Nations Development Programme, stated that child workers experienced repeated injuries but

returned to work after first aid or medical treatment. According to the report, in the construction business, 677 children were injured at 58 different workplaces while 752 suffered casualties at 48 different steel window-manufacturing units. As many as 60 children were reportedly injured at 23 places with unsafe electrical fittings, 125 at 17 places of furnishing, 111 children at 11 different tiles producing plants, 64 at eight units of cement production and 160 children suffered casualties at 35 different places during whitewash. In addition to this, a large number of child laborers were also sexually abused at workplaces.

The report suggested to the government to evolve an administrative mechanism for ending child labour in hazardous industries. It said children from lower income families were facing a high risk of disease and death due to widespread malnutrition. They are also obliged to work for a living, sometimes in hazardous occupations where they not only work for long hours and face a wide range of diseases and injuries, but are occasionally subjected to physical beating and sexual abuse, it added. Out of every 1,000 children who survive infancy, 123 die before reaching the age of five. Of those who survive, a large proportion suffers from malnutrition which leads to impaired immunity and higher vulnerability to infections. The report also cited figure from the national health survey which showed that between 30 to 40 per cent (6.2 to 8.3 million children) suffer from stunting (low height for their age). The report said children working with their families in agricultural operations like seedbed preparation, fodder cutting, rice planting, and harvesting were increasingly exposed to toxic substances in pesticides. The indiscriminate use of pesticides is responsible for growing health hazards, it added. [FACE Newsletter]

National Child Labor Survey:

A nation-wide survey was undertaken by the Federal Bureau of Statistics in close collaboration with the Ministry of Labor, Manpower, and Overseas Pakistanis, and the ILO, as a component of IPEC. This survey is the first of its kind in Pakistan. The objectives of the survey were:

- To collect information on the dimensions of the working children by age, sex, location, occupation, and industry.
- To collect information on the working conditions of the children, i.e., hours

worked, wages received, terms of employment, as well as on the safety and health aspects of their work place.

- To collect data on the socio-economic characteristics of the children and their families.

The summary of the survey shows that:

As of January 01, 1996, there were 40 million children aged 5-14 years. They represent about 30% of the total population.

More than 50% of the children, i.e., more than 20 million are in the age group 5-9 years.

Male-female ratio among children is 106 males to 100 females.

There are 72% or 28.70 million children in rural areas.

Among the 40 million children aged 5-14 years, 03.30 million, i.e., 08.30% were economically active during the reference week. Out of these, 02.40 million (73%) were male while females were 00.09% (27%).

The quantum of Child Labor increases with age, i.e., the older the child; the higher is the rate of participation in economic activity.

Children involved in elementary (unskilled) occupations were 02.30 million (71%), and in craft and related trade activities 00.60 million (19%).

The reasons given for Child Labor are to assist in household enterprises (54%), to supplement household income (27%), and no one available for household chores (14%).

It was, however, observed during the fourth meeting of the NSC that:

The international community, and the ILO instruments lay emphasis on the elimination of the most exploitative and hazardous forms of Child Labor, in the first instance. Though the survey results provide a good deal of information, yet do not throw light on all aspects of Child Labor.

The survey results do not identify the hazardous industries and occupations; therefore, no information on the magnitude of Child Labor

engaged in these industries and occupations is available

The survey results provide information on manufacturing sector but do not split information into industries constituting the manufacturing sector.

Labor Laws Passed:

Early in this decade the Pakistan National Assembly enacted two labor laws meant to curb such practices. The first, **The Employment of Children Act of 1991**, prohibited the use of child labor in hazardous occupations and environments. The second, **The Bonded Labor Act of 1992**, abolished indentured servitude and the *peshgi system*. As progressive as these laws were, the government failed to provide for their implementation and enforcement. It also neglected to inform the millions of working children and indentured servants that they were free and released from their debts. "We prefer to leave enforcement to the discretion of the police," says a Ministry of Labor official. "They understand best the needs of their community. Law is not an absolute. We must expect certain flexibility on the part of those who enforce it. Could this sometimes mean looking the other way? Absolutely."

If the number of people they have helped judges human-rights organizations, **the Bonded Labor Liberation Front is probably the most successful in Pakistan**. Since its founding, in 1988, the BLLF has led the fight against bonded and child labor, liberating 30,000 adults and children--frequently entire families--from brick kilns, carpet factories, and farms, and placing 11,000 children in its own primary school system (its motto: "Struggle against slavery through education"). At the same time, it has won 25,000 high-court cases against abusive and unscrupulous employers, and helped to push the recent labor legislation through the National Assembly.

Prevention And Monitoring Program:

The government has started number of programs to anticipate the abuse of child labor.

Registration of Contractors, Stitchers And Stitching Facilities:

Under this program, participating manufacturers shall publicly commit to a series of actions designed to prevent the practice of stitching by children less than 14 years within a period of 18

months. This will be done by formal registration of all concerned in the production of the soccer balls.

Establishment Of Internal Monitoring Systems:

Each manufacturer shall agree to establish an internal monitoring department to verify that it is in compliance with the Program. This department will provide training to employees to enable them to monitor the age of the stitchers.

Agreement To Independent Monitoring:

Each manufacturer will agree to have compliance with the Program verified by an independent third party who shall make the report public.

Coordination With Social Protection Program:

Each manufacturer will commit to work closely with ILO and other organizations involved with the project to integrate their efforts to remove children from conditions of Child Labor.

Social Protection Program:

Protection of Children in order to remove from child Labor can be achieved by Providing Educational and better living conditions.

IPEC:

The ILO's long-standing campaign against the scourge of Child Labor received new impetus in 1992 with the creation of the **International Programme on the Elimination of Child Labor (IPEC)**. It is now operational in more than 26 countries. The aim of IPEC is the phased elimination of Child Labor by strengthening the capability of countries to deal with the problem and by promoting a worldwide movement to counter Child Labor. ILO-IPEC strives to:

Support national efforts to combat Child Labor and to build up a permanent capacity to tackle the problem.

Give priority to the eradication of the most hazardous and exploitative types of Child Labor.

The experience of IPEC has confirmed that it is unrealistic to believe that this problem, which has been in existence for a long time, can be eliminated overnight. What IPEC is aiming for is to assist in halting this trend. It has established three priority areas:

- Children working under forced labor conditions and in bondage.
- Children in hazardous working conditions and occupations.
- Children under 12 years old.

IPEC believes that the struggle against Child Labor must be rooted in each society's culture, inspirations, and aspirations. Children and their families are the first line of defense against Child Labor. Thus efforts are directed to identifying and implementing concrete measures to empower them thru awareness, participation, and organization. IPEC also believes that the cooperation of the employers and the employers' organizations is absolutely crucial in the war against the menace of Child Labor. Specific plans of action carried out by employers' organizations have succeeded in preventing Child Labor, withdrawing children from hazardous work, and improving children's working conditions.

National Steering Committee:

Pakistan and ILO signed a Memorandum of Understanding on June 21, 1994 to implement the IPEC in Pakistan. It would be worth mentioning here that Pakistan was one of the first ten countries to join this programme.

National Steering Committee was established with the functions to:

- Consult on the nature and scope of the activities to be undertaken in the framework of a national programme under IPEC established in the context of national policy and give consideration to other ongoing planned Child Labor project.
- Select action programme proposals for inclusion in the national programme under IPEC.
- Provide information and justification in the national programme and budget of IPEC.
- Establish procedures for the review of the ongoing national programme within the IPEC and carry out review of the action programmes in the context of the national programme as a whole.

Another problem with complete abolition of child labor is that education and employment for children are not mutually exclusive. As mentioned previously, many children work and

go to school. In fact, many children have to work to go to school, otherwise, they could not afford the tuition and other fees associated with attendance. This underscores the fact that child labor and education may work together in many cases. As mentioned above, specialization allows some children to acquire an education through support of their working siblings. The result of abolishing child labor would then be a reduction in the educational attainment of a population. A study in Bolivia found that children who were not employed actually had the lowest educational achievement (UNICEF 1992). Another study found that only 20 percent of children who dropped out engaged in paid employment (Seetharamu and Devi 1985). Therefore, immediate abolition is not necessarily the answer. The relationship between labor and education is more complicated than expected.

Other Opportunities:

- Rehabilitation.
- Education.
- In-kind Assistance.

Changing Community Attitudes Toward Child Labor In The Soccer Industry:

Awareness Rising & Income generation.

This Agreement has been widely hailed at home and abroad. A government spokesman said "Pakistan backs this agreement because we want to see our children in schools, not in industries working as Child Labor." This Agreement would be the harbinger of similar pacts between various partners and hopefully Code of Conduct agreements would become a common feature.

There is now a need to introduce the programme of vocational training along with proper educational facilities on a war-footing basis. This is essential if there is to be an up gradation in the skills of these children. It is more imperative because the working children are, as stated earlier, a source of income for the household. However, there should be no haste in removing children from workplaces while lacking the academic infrastructure. It is proposed that there should be a process of establishing schools in the vicinity of the factories and at the same time, arranging a program of providing stipends to the children to offset the loss in income. This is a gigantic task, considering the fact that the successive governments have failed in providing

educational facilities to children, especially in low-income areas

A major drawback is the irrelevance of education and training imparted in the formal sector, which has resulted in a higher dropout and non-employability of the graduates. Moreover, the pathetic quality of education is a big factor in the deterioration of the education system in the country. A private-public partnership scheme can be floated in which teachers and government can jointly provide the facilities of quality education. At the same time, philanthropists can also adopt schools and help defray the expenses. Employers' organizations should also participate in this idea.

Bangladesh has a successful program called "Specialized Training and Educational Program (STEP) for the Underage Displaced Garment Workers". Recognizing the need to ensure effective rehabilitation of these displaced Child Labor and to avoid social dislocation, Development Initiatives for Social Enhancement (DEVISE), an NGO with the support of IPEC, has initiated a programme targeting these displaced underage workers. The programme was designed to provide basic education to the children, as well as, agro-based and entrepreneurship development training to create self-employment opportunities, and finally to compensate their jobless situation thru a package program that helps them to become economically active thru self-employed schemes.

Conclusions:

In order to conclude the whole discussion on child labor, we can say that Child labor is a pervasive problem throughout the world, especially in developing countries. Africa and Asia together account for over 90 percent of total child employment. Most of child labor occurs in Asia. Child labor is found nearly in every industry like agriculture, mining hotels etc. In Pakistan this abuse is quite clear in Sialkot, Kasur, Hyderabad etc. certain national and international laws are recommended also in order to remove child labor. Different surveys are also conducted to reduce this abuse.

Government has also started some monitoring programs like establishment of internal monitoring systems and social protection program etc. soccer industry and carpet weaving

and the common areas where child labor is common.

Suggestions And Recommendations:

Solving the problem of child labor will be a very tough task which no single agency or department can be solely responsible for. As the basic goal is to eliminate the child labor, use and abuse, of children. But as we live in socioeconomic society so the above goal is not achievable and even it could be achieved this will mean hunger and starvation for hundreds of thousands of families.

Abolition of child labor is possible only if the standard of living of millions of people is raised and alternatives found to allow them to fulfill their basic needs. Here is certain recommendation for elimination of child labor abuse.

- Application of the protective legislation relating to the child labor.
- Situational analysis of child labor in various sectors of economy.
- Creating awareness amongst the relevant segments of society.
- Strengthening the existing organizations specially the directorate of Labor Welfare Punjab and Industrial institutions.
- Involvement of tripartite partners in policy formulation and direct action.
- Strengthening and activation of the Vigilance Committees to eradicate bonded labor.
- Formation of monitoring and advisory bodies to coordinate efforts to combat child labor in the province.
- Training of inspecting staff.
- Awareness and community Mobilization Activities.
- Rehabilitation program for Child Labor.
- Surveys and mapping of Child Labor.
- Strengthening the capacity of Directorate for combating Child Labor
- Collect/study child labor data and devise interventions that allow for the possibility of children being in school and working;
- Improve the quality of schooling by investing in education so as to increase its value to children and parents;
- Provide subsidies to poor families prone to having working children so they can afford their children's schooling (income subsidies, nutritional supplements); and

- Establish partnerships of international organizations dedicated to improving children's lives.

Flaws Seen In Centers For Working Children:

The Child Rights and Child Abuse Committee (CRCAC) of the Pakistan Pediatric Association (PPA) has said working children had not been selected judiciously for enrolling them at the rehabilitation centers set up to help children working under hazardous conditions.

The ILO and the Sindh Labour Department to visit the centres examine the children enrolled there and submit a report to them about the centres approached the CRCAC.

Members of the CRCAC visited all the five Community Education Action Centers (CEAC), set up under a child labor elimination project, and found out that an overwhelming majority of the children enrolled at the CEA Centers were not involved in hazardous occupations.

The Sind Government has set up five centers, at Karachi, Thatta, Hyderabad, Mirpurkhas and Shikarpur, under a two-year project sponsored by the European Commission, the ILO and the Pakistan Bait-ul-Mall.

Under the project, the government has picked up 300 children working in hazardous trades and enrolled them, 60 each, in these centres, where they are provided education, meals, and Rs5 a day. Financial incentive is also given to their families to prevent their withdrawal from the centres.

The committee, comprising doctors Yasmeen Akbani, Habiba Hasan, Shaukat Moin, Aisha Mehnaz and Khalid, in its report has pointed out that no funds for medical treatment of children has been specified in the project. The committee has suggested that funds be allocated for medical treatment of children enrolled at the CEA Centers. Funds have been allocated for the children enrolled at 11 National Centers for Rehabilitation of Child Labor, run by the Bait-ul-Maal.

The committee's report, copies of which have been sent to the Sindh Labor Department, the ILO, the EC, the Pakistan Bait-ul-Maal, etc, has suggested that children be admitted to the centers judiciously and that input from the PPA

be sought for identification of hazardous occupations.

The report says children at the centers were recruited in haste and most of them did not fulfill the criteria of the target group, employed in prohibited hazardous and dangerous occupations.

Very few children were from occupations such as bangle and biri industries, or from welding jobs. Most of the children from garages or auto workshops, who had been admitted to the centers, did only odd jobs and did not show signs of any hazard.

The committee also observed that some children had not even been working but were attending the centers under false pretences. A boy told the committee that he was attending the center only because it was not only free but he was also being paid to attend.

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Comparative evaluation of Cardiac Markers (CK-MB and SGOT) (Used in diagnosis of patients with Acute Myocardial Infarction)

Noor Fatima, Muhammad Azam Gill, Muhammad Ahsan Pervez
Department of Community Health Sciences
FMH College of Medicine & Dentistry, Lahore

Abstracts:

Patients with chief complaint of chest pain suggestive of Myocardial injury were targeted from the admitted cases at Accident and Emergency Department of Jinnah Hospital, Lahore (An urban tertiary care teaching Hospital) Pakistan between 24th August 2001 to 24th October 2001. 5 patients were excluded because of incomplete enzyme data during the first 26 hrs. Therefore 105 constituted the study universe. Among 105 patients, acute MI was diagnosed in 96 and 9 patients were diagnosed with stable and unstable angina. Results of CK-MB and SGOT over the first 24 hours were compared for their diagnostic performance. Sensitivity, Specificity, PPV, NPV, False positive and false negative error rates. CK-MB is a better Cardiac Marker in case of acute Myocardial Infarction than SGOT. Both are not needed, as it is not cost effective in developing countries with resource-constrained settings.

Conclusion: Furthermore if CK-MB and SGOT values are normal, it does not guarantee absence of Ischemic injury to heart. Therefore patients with high normal values and presented with acute chest pain should be considered for exercise testing before sending home.

Key words: Myocardial infarction, Ck-MB, SGOT.

Introduction - Back Ground:

Few if any areas of medicine have undergone much profound and rapid changes in the fundamental understanding of complex biological processes and subsequent development and deployment of invasive and non invasive technology for their diagnosis and treatment, as of Acute Coronary Syndrome which constitute Unstable Angina and myocardial infarction. Although diagnosis of Ischemic Heart Disease (IHD) can be made with confidence from a typical history and physical examination, a number of laboratory tests are required for its confirmation, including

- 1- ECG
- 2- Measurement of Cardiac Markers
- 3- Cardiac imaging
- 4- Other non specific indices in due course.¹

They are not only used to confirm acute myocardial infarction but are also valuable for risk stratification after acute myocardial injury. Many studies have shown that after diagnosing acute myocardial infarction on basis of history, physical examination and ECG, serum cardiac markers in emergency department are done for

- Diagnostic confirmation of MI
- Identification of patients with acute coronary syndrome
- Identification of patients who can be safely discharged home vs. their need for hospitalization.^{2,3}

The traditional gold standard test for the diagnosis of cardiac ischemia has been considered to be myocardial band isoenzyme of Creatinine kinase (CK-MB). Recently discovered tests, the serum assays of Cardiac specific troponin (cTnT) being more sensitive and specific for diagnosis of myocardial infarction and myoglobin are also in use where as other traditionally used enzymes SGOT and LDH, are now considered to be less useful.⁴

Above proposed strategy for diagnosis and risk stratification is now commonly used in all developed countries, but high cost of myoglobin and cardiac specific troponin has limited their routine use in our setting (Pakistan), and most of our hospitals are still using CPK, CK-MB, SGOT and LDH for confirmation of MI. These tests are not only used for simple diagnosis of MI but also provide indicators of dangerous consequences to which a patient with Cardiac Ischemia is prone to, commonly. Therefore the parameters used for diagnosis of MI should be extremely sensitive and specific, so that there should be no question of doubt in diagnosis.⁵ With this perspective it has been decided to conduct a study to compare the sensitivity and specificity of Cardiac enzymes CK-MB and SGOT, used here in Pakistan and to evaluate their diagnostic significance for acute MI. A testing strategy deployed using prospectively collected data of patients presented with acute chest pain and testing power of CK-MB and

SGOT is measured. Proforma of each patient was repeatedly reviewed carefully and blood levels of raised enzymes in first 6 hours of hospital stay and during first 20-26 hours were recorded.

Study Question:

Comparative evaluation of cardiac markers (CKMB and SGOT) used in the diagnosis of patients with myocardial infarction.

Material & Methods – Target Population:

All eligible patients selected according to selection criteria, who were admitted in Accident and Emergency Department of Jinnah Hospital, Lahore (An urban tertiary care teaching Hospital) Pakistan between 24th August 2001 to 24th October 2001, for a chief complaint of chest pain suggestive of Myocardial injury were targeted. 5 patients were excluded because of incomplete enzyme data during the first 26 hrs. Therefore 105 constituted the study universe.

Data Collection:

Data was obtained from history, physical examination and ECG with the help of senior doctors on duty and recorded on Standardized Proforma (a part of medical record). Patients were classified into two categories based on history, physical examination and ECG that whether all findings including ECG are consistent with Myocardial necrosis or not. Cardiac enzymes measurements were obtained according to standard "Rule-out Myocardial Infarction protocol" which specifies CK and CK-MB sampling every 8 hourly for 24 hours. CKMB was considered as raised with more than 25 u/l serum levels and SGOT more than 40u/l in serum. Two time frames have been selected for analysis. First between 0-6 hrs of presentation to emergency department, as early decision is extremely important for decision making and risk stratification, and second 20-26 hrs to confirm the diagnosis, because at this time SGOT starts rising and CK-MB reaches its peak and then steps down. Because the protocol is based on time of emergency department blood draw and is meant to encompass all patients regardless of time of onset of acute chest pain. Therefore a range of time was specified during which blood samples were drawn so that serum enzyme

levels of each patient would be nearest to standard peak value for that specific enzyme.

Outcome:

The lack of alternative gold standard test for diagnosis of myocardial injury adds uncertainty in analyzing the performance of CK-MB in this setting. Hence for this purpose we considered the outcome, the occurrence of MI or any major cardiac event within 72 hours as an alternative standard. The nurse in coronary care unit who recorded their test results was blind to the initial assessment of patients in emergency unit. Diagnosis of MI was made if any of the following criteria was present;

1. An absolute value of CK-MB >25 u/l.
2. Convex ST elevation with peaked or inverted T wave.
3. ECG showing development of Q waves at least 0.04 sec and 25% decrease in preceeding R wave, compared with initial ECG in emergency.
4. If ST evolved in due course of time.

Only events that occurred within 26 hours of presentation to emergency were included in analysis. Since use of cardiac markers in first 26 hrs might reasonably be expected to help in further decision-making.

Analysis:

Sensitivity, Specificity, NPV and PPV were calculated for combined end point for acute MI. Analysis compared potential decisions based on peak levels of CK-MB and SGOT from first 26 hrs after presentation to emergency department. Analysis was performed for patients strata defined by changes consistent of ischemia on ECG. False positive and false negative error rates were also calculated for CK-MB and SGOT.

Results:

Among 105 patients, acute MI was diagnosed in 96 and 9 patients were diagnosed with stable and unstable angina. Results of CK-MB and SGOT over the first 24 hours were compared for their diagnostic performance. Sensitivity, Specificity, PPV, NPV, False positive and false negative error rates are shown in Table-1

Strategy:

Based on results presented and analysis of both enzymes, it becomes quite clear that already developed proposed strategy⁶ for utilization of CK-MB in conjunction with ECG for the diagnosis of MI is correct and should be used to rule out MI and that SGOT has no place in it.

Discussion:

It has been proven that SGOT does not appear to be useful cardiac marker that should be done routinely with CK-MB in initial 24 hrs after acute chest pain for diagnosis of MI.⁷ Results are supporting the already developed strategy used in patients with acute chest pain called "six hour protocol to rule out MI" and "ROMI".^{8,9} As data pertain to a cohort study of patients from a single teaching hospital who were admitted to that particular hospital therefore the above strategy should not be considered as recommendation for all factors responsible for raised cardiac enzymes in blood.

Data indicate that CK-MB appears to be superior marker that should replace SGOT and that both assays need not be performed. Let's see how these enzymes are involved in the course of myocardial necrosis and are there other conditions that effect SGOT and CK-MB?

Cardiac Markers in MI: Serum levels of various cardiac enzymes progressively increase as myocardial necrosis evolves, these are;

Creatinine Kinase: It has greater than 95% sensitivity and specificity for myocardial injury when measured within 24-36 hrs of onset of chest pain. Levels increase within 4 to 6 hrs of acute chest pain, reach a peak in 24 hrs and return to baseline in 48-72 hrs. Infrequently CK-MB levels are also increased as a result of cross reactivity of some assays for CK-MB and CK-BB and as a result from non-cardiac source, in the absence of MI, CK-MB in blood is potent indicator of myocardial injury but not necessarily myocardial infarction. Both total CK and its MB fraction may rise in severe angina, cardiac surgery, myocarditis, Electrocadioversion or extensive reversible ischemic damage. Absence of CK-MB does not rule out infarction. There could be damage to any free cells or blood supply near the

damaged area might become poor so that enzyme couldn't enter the circulation.

SGOT: SGOT levels rise in many conditions where heart muscle suffers ischemic damage, serum AST rises within 6-8 hrs with peak value at 24-48 hrs and decline to normal within 72-96 hrs. Elevation of SGOT occurs midway in the time sequence between that of CK-MB. These are rarely used now for diagnosis of myocardial infarction, but can be very useful in confirming MI in patients presenting several days after an episode of chest pain. Conditions other than MI that effect AST levels are listed in table - 2.

Cardiac specific troponin: Troponin I (cTnI) and troponin T have greater sensitivity and specificity for Myocardial injury than those for CK-MB. More over its delayed clearance from blood makes it more useful than CK-MB.

Myoglobin: Rapidly appears in plasma approximately within 1-2 hrs reaches at detectable level and falls down to normal within 24hrs, permitting a source to detect MI in very initial hours of chest pain. Many clinical centers use cTnT or cTnI rather than CK-MB as routine serum cardiac markers for diagnosis of acute MI. Although any of the analysis remains clinically acceptable, it is not cost effective to measure both cardiac specific Troponin and CK-MB at all time points in every patient. Every enzyme has its own specific time period of appearance, reaches its peak and disappears which imply its specific importance in different situations as in table 3.¹¹

Despite addition of numerous promising injury markers, a # of studies have shown that none of these, as a single agent can accomplish all above goals in emergency department. However combination of various markers used in diagnostic algorithm may enable us to distinguish patients with myocardial injury from those without. Over all sensitivity and specificity can be improved by their serial measurement, but still we can't rely on them and their place is still a gateway.¹² A study on CK-MB and cTnT showed that cTnI does not appear to be superior marker than CK-MB and both bioassays need not be performed on same patient.¹³ A study in Canada has also disclosed that due to lack of 100% sensitivity and specificity of laboratory tests (cardiac markers), 4 % of all MI patients

are sent home from emergency department. These patients have higher morbidity and mortality than those admitted in hospital.¹⁴

Conclusion:

CK-MB is a better Cardiac Marker in case of acute Myocardial Infarction than SGOT. Both are not needed, as it is not cost effective in developing countries with resource-constrained settings. Furthermore if CK-MB and SGOT values are normal, it does not guarantee absence of Ischemic injury to heart. Therefore patients with high normal values and presented with acute chest pain should be considered for exercise testing before sending home.

Table – 1: Comparative results for diagnostic performance of CK-MB & SGOT

ANALYSIS OF CK-MB		
0-6 hrs		
	MI	Non MI
Test +ve	89	2
Test -ve	7	7
PPV of CK-MB = $89/89+2 \times 100 = 97.8\%$		
NPV of CK-MB = $7/7+7 \times 100 = 50\%$		
Sensitivity of CK-MB = $89/89+7 \times 100 = 92.7\%$		
Specificity of CK-MB = $7/7+2 \times 100 = 77.7\%$		
Fp error rate = $2/2+7 \times 100 = 22\%$		
Fn error rate = $7/89+7 \times 100 = 7.2\%$		
20-26hrs		
	MI	Non MI
Test+ve	95	2
Test-ve	1	7
PPV of CK-MB = $95/95+2 \times 100 = 97.9\%$		
NPV of CK-MB = $7/7+1 \times 100 = 87.5\%$		
Sensitivity of CK-B = $95/95+1 \times 100 = 98\%$		
Specificity of CK-MB = $7/7+2 \times 100 = 77.7\%$		
Fp error rate = $2/2+7 \times 100 = 22.2\%$		
Fn error rate = $1/1+95 \times 100 = 1.04\%$		

98.80%

ANALYSIS OF SGOT

0-6 hrs

	MI	Non MI
Test+ve	74	6
Test -ve	22	3

PPV of SGOT = $74/74+6 \times 100 = 92.5\%$

NPV of SGOT = $3/3+22 \times 100 = 12\%$

Sensitivity of

SGOT = $74/74+22 \times 100 = 33\%$

= 77%

Specificity of SGOT = $3/3+6 \times 100 = 33\%$

Fp error rate = $6/6+3 \times 100 = 66.6\%$

Fn error rate = $22/22+74 \times 100 = 22.9\%$

20-26hrs

	MI	Non MI
Test +ve	88	7
Test -ve	8	2

PPV of SGOT = $88/88+7 \times 100 = 92\%$

NPV of SGOT = $2/2+8 \times 100 = 20\%$

Sensitivity of SGOT = $88/88+8 \times 100 = 91\%$

Specificity of SGOT = $2/7+2 \times 100 = 22\%$

Fp error rate = $7/7+2 \times 100 = 77.7\%$

Fn error rate = $8/8+88 \times 100 = 8.3\%$

Out come (Total)

MI patients = 96

Non MI patients = 9

Table - 2: Conditions effecting the AST levels other than MI

Pronounced elevation (5 or more times normal)	Moderate evaluation (3 to 5 times normal)	Slight elevation (up to 3 times normal)
Acute hepatocellular damage	Biliary tract obstruction	Pericarditis
Myocardial damage	Cardiac arrhythmias	Cirrhosis
Circulatory collapse	Metastasis or primary tumor in liver	Pulmonary infraction
Acute pancreatitis	Muscular dystrophy	Delirium tremors
-	-	CVA

Liver is among the richest source of amino transferases.¹⁰

Table -3: Cardiac Marker showing their relative advantages

Cardiac Marker	Relative Advantage
Myoglobin	Rapid detection of ischemia with in 2 hrs
CK-MB	Diagnosis of recurrent ischemia once acute MI has occurred
cTnT & I	Detection of micro infarcts (with normal CK-MB value), and Confirmation of acute MI with in 2hrs
SGOT	Shows myocardial damage up to 5-7 days
LDH	Shows myocardial damage up to 7-10 days

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Spontaneous Vaginal Delivery After a Previous Lower Segment Caesarean Section

Binyameen

Department of Obstetrics & Gynaecology
Allama Iqbal Medical College, Jinnah Hospital, Lahore

Abstract:

The study was conducted at the Department of Obstetrics & Gynaecology, Jinnah Hospital, Lahore. All pregnant patients with history of a previous lower segment caesarean section were included in the study. Those considered suitable for vaginal delivery were permitted a trial of labor. Patients were allowed to go into spontaneous labor till 41 weeks of gestation. Neither induction nor augmentation of labor was carried out. Out of 230 patients with one previous lower segment caesarean section, 81 (35%) had an elective lower segment caesarean section and 149 (65%) were selected for trial of labor. Of those selected for trial of labor, 87 (38%) were delivered vaginally and 62 (27%) were delivered by emergency lower segment caesarean section. By proper counselling and careful trial of labor, repeat caesarean section can be avoided in almost 38% of patients with one previous lower segment caesarean section with out induction and/or augmentation of labor at any stage.

Introduction:

Since Craigen's dictum that 'once a caesarean, always a caesarean', many women with a previous caesarean section have successfully been allowed to deliver vaginally. In fact, more than 70% of women with a previous lower segment caesarean section will have successful vaginal deliveries in subsequent pregnancies. The incidence of caesarean section all over the world has increased in the past few years. This escalation in the rate of caesarean section is due to a perception of increased fetal safety, more patients undergoing primary caesarean deliveries and slow acceptance of vaginal birth after caesarean section. Caesarean delivery is associated with increased maternal mortality and morbidity and is not associated with improved perinatal mortality.

Performing a caesarean delivery is more expensive than vaginal birth and the length of stay in the hospital is longer².

Although neither a repeat caesarean delivery nor labor after previous caesarean delivery is without risk, it has been demonstrated that a trial of labor is successful is 60% to 80% of patients who had low transverse uterine incision for one previous delivery^{3,4} and the success rate is 63% to 70% in women for whom the indication was "cephalopelvic disproportion".

There is very high mortality and morbidity due to caesarean section in developing countries. Therefore we should try to avoid safely the very first caesarean section. The high caesarean section rate begins with

high frequency of primary caesarean section. Therefore a concentrated effort should be made to decrease the primary rate⁵. In year 2000, of all births in the United States, 23% were caesarean, 37.5% of which were repeat caesarean births. Approximately 60% of caesarean births were elective repeat caesarean sections⁶.

The objective of this study is to document the mode of delivery is patients with one previous caesarean section in obstetrics and gynaecology unit one of Jinnah Hospital, Lahore. Consideration of patient choice is essential when reaching a decision regarding the mode of delivery.

Patients and Methods:

The study was carried out in unit – 1 of obstetrics and gynecology Jinnah Hospital, Lahore. The study was carried out over a period of six months from March to August 2004 over 230 patients with history of one previous lower segment caesarean section. All patients who presented in our prenatal clinic and labor room with history of a previous lower segment caesarean section were included in the study. During the first prenatal visit, a plan for the mode of delivery was discussed with the patients.

Patients were asked to consider the options carefully and communicate their decision to the obstetrician at their next visit to the antenatal clinic. They were informed about success rate and a 2% risk of previous uterine scar rupture and associated complications with trial of labor. The plan was reassessed as

required and reinforced through the prenatal care. Most women opted for a trial of labor.

Elective caesarean section was performed on patients, with multiple pregnancies, cephalopelvic disproportion, diabetes mellitus, pregnancy induced hypertension, malpresentation, previous classical caesarean section, history of uterine rupture and myomectomy. Indications for emergency caesarean sections are given in table - 1.

Table 1: Indications for emergency caesarean sections.

Indication	Number	%
Failure to progress	28	45
Fetal distress	9	14.5
Premature rupture of membranes	8	13.5
Ante - partum haendarchage	6	10.1
Impending rupture of scar	4	-7
Pregnancy indeed induced hypertension	4	5.9
Patient request	3	4

Patients selected for vaginal delivery had a non - recurrent cause of previous lower segment caesarean section. The antenatal progress in the current pregnancy was examined to rule out co-incidental indication for caesarean section.

None of our patients underwent induction of labor, and when the patients failed to progress in labor due to inadequate uterine activity, caesarean delivery was performed instead of augmentation with oxytocin.

During labor, the fetal heart rate was monitored intermittently. We were very vigilant about scar tenderness.

The patients desires were taken into consideration before decision making. If patients did not go into spontaneous labor till 41 weeks of gestation, lower segment caesarean section was performed.

Results:

Two hundred and thirty patients with a previous caesarean section were delivered during the study period. Of these 87 (38%) were delivered vaginally, 62 (27%) had emergency caesarean section and 81 (35%) underwent elective caesarean delivery (Table:2)

Table 2: Distribution of patients according to mode of delivery.

Mode of Delivery	Number	%
Elective SCS	81	35%
Spontaneous vaginal deliver	87	38%
Emergency LSCS	62	27%

Nine patients changed their mind and opted for caesarean section and hence the trial of labor was abandoned. There was no scar dehiscence in any patient. None of these patients required caesarean hysterectomy. Rate of complications was 10% in the caesarean delivery group as compared to 3% in the patients delivered vaginally. In the caesarean delivery group the estimated blood loss ranged from 250 ml to 1000 ml. Twenty one patients required blood transfusion during surgery due to antepartum hemorrhage and intra operative hemorrhage.

Among the women who had vaginal deliveries, the estimated blood loss ranged from 150 ml to 650 ml. None of the vaginally delivered patients required blood transfusion.

The duration of hospital stay was longer in the caesarean delivery group, ranging from 5 to 12 days as compared to the vaginally delivered group in which the patients stay in hospital ranged from one to nine days. Hospital stay was prolonged in the vaginal delivery group due to low birth weights, prematurity and transient tachypnoea of new born rather than maternal complications. Fetal outcome was almost similar in both groups. There were three still births all of these were intrauterine fetal deaths prior to onset of labor. The fetal weight in the vaginal delivery group ranged from 1.8 kg to 4 kg whereas in the caesarean delivery group, the fetal weight ranged from 2 to 4.8 kg.

The rate of spontaneous vaginal delivery was more in the patients who had history of previous vaginal delivery compared to those who had no history of vaginal delivery prior to their previous lower segment caesarean section.

Discussion:

In patients with history of a previous lower segment caesarean section, repeat caesarean section can be avoided in well selected patients for vaginal delivery. The use of continuous electronic fetal heart monitoring and intravenous access is recommended⁷. A trial of

labor in patients with a previous caesarean delivery appears to be a reasonable consideration. The success of vaginal delivery after one previous caesarean section in the developed world is high as compared to our setting⁸. The use of oxytocin leads to increased risk of uterine rupture. Leung et al reported a three-fold increase in the risk of uterine rupture in women who received oxytocin⁹.

Oxytocin use for induction and augmentation of labor was associated with a 4.6 fold and 2.3 fold increase in the incidence of uterine rupture respectively¹⁰. The use of prostaglandins in women who have had previous caesarean delivery is associated with a clear increase in incidence of uterine rupture. There is a reported incidence rate of 3.9% of uterine rupture in women who received prostaglandin E₂ for cervical ripening compared to 0.9% among those who did not receive prostaglandin E₂¹⁰.

In this study we have shown that a trial of scar in women who have undergone one previous caesarean section can be successful, with minimal major complications, if patient selection is judicious and labor is managed appropriately with avoidance of the use of prostaglandins and oxytocic drugs.

Conclusion:

In our set up, repeat caesarean section can be avoided in 38% of patients with a previous lower segment caesarean section, by proper counselling and careful trial of labor without induction and augmentation. Vaginal delivery is associated with lower maternal morbidity and reduced hospital stay make it more cost effective.

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Evaluation of Health Hazards among Traffic Policemen Working in the Busy Road Crossings of Lahore

Nargis Rehana Malik

Department of Community Medicine F.J.M.C., Lahore

Khurram Ahmed Faridi

Fatima Memorial Hospital College of Medicine & Dentistry, Lahore

Abstract:

Among many occupations, Traffic Police duty is one of the occupations which is rarely considered for the evaluation of health hazards. The present survey is conducted for the same. Out of different busy road crossing of Lahore 13 different road crossings are selected and for comparison two least busy road crossing were selected for this purpose. The result show that the traffic load/density vary from 590 to 710 per minute and the total number of operational motor vehicles ever reached to 1.0 million to 1.2 million. The quantity of dust inhaled in 8 hours shift of a policeman is 3 to 4 times than that of recommended value. The noise level to which a traffic policeman is exposed accedes from 88 dB to 94 dB as compared to the permissible limit of 85. The blood lead levels are also very high. The results revealed that 21% to 33% of policemen posted at busy road crossings have the lower lung function values than the normal and 13% of them were suffering from Pneumoconiosis.

Introduction:

Since the beginning to of 20th Century the road transport industry has experienced un-precedent growth, resulting in the emergence of new category of workers, whose field of activity is not only local but also are an increasingly – nation wide and even international. The means of transport have changed their shape, quality, and quantity in such a diversified manner that the rate of their growth is un-predictable. In the cities of Pakistan the addition of motor vehicle is vertically increasing and hence the problems associated with them have become in also un-predictable. The motor vehicle exhaust is certainly associated with them but the transportation of the dust from out side the city to inward and increasingly noise pollution is also the major threats to the health, which are associated with the motor vehicle. The rate of increase in the motor vehicle can be very well imagined by the number of vehicles added in Lahore city per year from 2000 to 2004. In the year 2000 0.24 million, in 2001 0.26 million, in 2002 0.29 million, in 2003 0.41 million, and in 2004 0.52 million motor vehicles were added only in the city of Lahore. If we compare the figures of year 2000 and 2004 we see that the number of vehicles is more than double in comparison. The major cause behind this rapid increase is the leasing companies the bank loaning scheme. It is certainly an alarming situation, threat the environment and has becoming uncontrollable health hazard. At present, approximately 1.2 million motor vehicles are in operation in the city of Lahore. This number is certainly very high as compared to the capacity of roads in the city center and hence traffic load or density of motor vehicles has tremendously increased in the busy road crossings of Lahore. At the time of red signals long queues of motor vehicles un-precedent increase the noise level, motor vehicular exhaust and dust. This type of

situation is essentially hazardous to the general public but the people working or residing in or around the busy road crossings are very much affected. Particularly the traffic police men who are about to stay there under such polluted condition are the most affected victim and supposed to be affected the most in future. A survey is conducted to evaluate the lungs functions of traffic policemen posted in the busy road crossing of Lahore. The main objective of this survey was the identification of lungs health hazards induced in the traffic police men by the virtue of their occupation and to suggest the remedial measures for the betterment of such deteriorating condition.

Inhalation, Deposition & Elimination of Dust:

Dust particles are carried with the air stream into the lung during inhalation, the majority of them being either exhaled or eliminated by means of the lung clearance mechanism. A small number of these particles may be deposited in the lung, depending on their size, and in accordance with the physical laws governing impaction; sedimentation and Brownian movement. Medical research has shown that particles of 0.1 – 5 μ m can remain in the alveolar passages (respirable dust) while larger particles are retained by the mucous membrane of the nose, the throat, the trachea and the bronchi and are eliminated by the clearance mechanism. Smaller particles (<0.1 μ m) behave as colloids, of which a typical example is smoke (the affinity of poisonous gases to these particles in suspension must also be taken into consideration). Elimination of the dust particles is largely effected by the mucociliary system of the respiratory tract, which causes the mucous secretion to move towards the mouth aided by the physiological reactions of coughing and sneezing. A smaller fraction of the particles

are transported by the lymphatic system after penetrating the interstitial tissue.

In the case of asbestos, inhalation, deposition and elimination depend on the shape and size of the fibres. Very small fibres of 3 μm or less in diameter having lengths of up to 100 μm can also reach the alveoli. The smallest asbestos fibres can reach as far as the pleura and even attain the pleural space.

Methodology:

In the city of Lahore 13 busy road crossings and 2 least busy road crossings were selected as follows:-

1. Chowk Yateem Khana
2. Chowk Chauburji
3. Mozang Chungi
4. Chowk Shah Alam
5. Bhati Chowk
6. Railway Station
7. Chowk Gawalandi
8. Chairing Cross
9. GPO Crossing
10. Shadman Chowk
11. Lakshami Chowm
12. Yadgar Chowk
13. Ravi Bridge
14. Defence Chowk
15. Hamdard Chowk (Kot Lakh Pat)

The Dust inhaled by the policemen was estimated with the help of filtration head (cyclone type) recommended by British Cost Iron Research Association (BCIRA). The rate of suction was maintained at the rate of 2.5 liters/minute. The noise level was estimated by precision Noise Level Meter coupled with Octave Band Analyzer. The lungs functions were tested with the Vitalograph on standard lungs functions chart. The SO_x and NO_x were determined by the Dragger Tubes used as a direct reading instrument. The dust fall is measured on the Griffen Meter square by free fall method. The lead levels were estimated through Atomic Absorption Spectrophotometry.

Results and Discussion:

Policemen standing continuously for 4 or more duty hours are likely to become the victim of all types of pollution produced by the motor vehicles. Specially during the peak hours when the number of vehicles passing

through a certain point in one minute i.e. traffic density is tremendously increased. The result show that in the busy road crossing of Lahore, the traffic density ranges 590 to 710 per minute and in comparison in least busy road crossing is ranges 360 to 400. It is quite a large density in hence as results show it produces a lot of problems. It is observed that the amount of dust inhaled by on duty police men ranges from 3.9 to 4.9 mg per 8 hours whereas the recommended permissible limit is only 1 mg per hour. Similarly the SO_x and NO_x level at busy road crossings of Lahore during peak hours reaches 1.8 to 3.3 times of given ambient standard. The amount of dust falling in one meter square was calculated as high as 7.9 to 10.7 gm/m² which is certainly very high as compared to a least busy crossing in Defence area i.e. 3.2 gm/meter square. The noise level measurement show that during peak hours in the busy road crossing of Lahore the level accedes from 88 dB to 94 dB whereas the permissible limit is 85 for 8 hours shift in a day. Similarly for their blood lead levels 18% to 32% of them were found having more blood lead levels than that of recommended value. The lungs functions tests of police men posted at the busy road crossings of Lahore revealed that 21% to 33% of them have less values than that of normal values. Similarly radiographs of the lungs of such police men showed that 13% of them were suffering from Pneumoconiosis. It is certainly a very alarming situation. We are producing sick skilled policemen. On surface we do not feel the quality of situation because at present we have a huge human resource but a time will come when this availability be curb down by such conditions at that time it will be too late. It is better to prevent it earlier than it is happening. It is recommended that :-

1. All of the earthy pavement may be bricked or cemented so that the generation of dust may be minimized.
2. The vehicles should be strictly observed for the generation of noise.
3. The existing laws may be implemented in its true sense.
4. The general public may be motivated through media, education, public leaders etc. to obey the environmental protection laws.
5. The Environmental Protection concept should be introduced at all educational level.

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Incidence of Neonatal Tetanus (N.T.) Among the Neonates With Special Reference to Sex Distribution, Maternal Immunization and Socioeconomic Factors, Admitted In Paediatric Ward At Allied Hospital, Faisalabad, Pakistan During 2000 – 2002

Dr. Zahid Masood Kham, Dr. Jawad Husain, Ms. Salma Hameed,
Ms. Uzma Afzal, Ms. Rahat Kalsoom, Ms. Amna Adil, Ms. Asma Tariq, Ms. Iram Naz
Punjab Medical College, Faisalabad

Abstract:

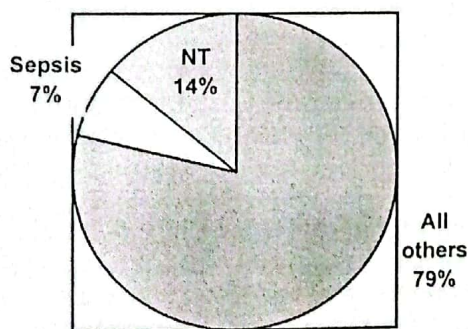
Neonatal tetanus (N.T) a preventable disease is one of the major killers of neonates in developing countries including Pakistan. Present study has provided the information about the relationship between this Preventable disease with certain factor like educational status of the parents and maternal immunization against tetanus. Present study was carried out at Paediatric-Ward of Allied hospital Faisalabad for the years 2000-2002 to examine the neonatal tetanus cases and status of the affected persons. The results showed that only 32 cases had been registered persons. The results showed that only 32 cases had been registered during the period of 2000-2002. it was also recorded that 20 babies died due to severity of the disease which means that only 37.6% survival is possible. The patient status analyses indicated that majority of the cases admitted belonged to rural areas, had lower socio-economic status, mothers were non-immunized and mostly male babies were the victim. This disease is more common among the neonates born in the rural areas mostly attended by the unskilled persons (Dai) and majority of the babies shifted instruments during deliveries Therefore, health education and proper management regarding the elimination of neonatal tetanus are required. Maternal immunization against tetanus should be promoted.

Key Words

Neonatal tetanus, maternal immunization, education status, neonatal tetanus and socioeconomic status.

Introduction:

Neonatal tetanus is a disease for newborns, with a case fatality rate of 70 per cent to 100 per cent. Neonatal tetanus is responsible for 14 per cent of all neonatal deaths (WHO, 1998)



Neonatal tetanus occurs most commonly in the third world and developing countries, which have less developed health infrastructure. Within these countries, it is frequently found among people with little or no access to health care services or education and have low income sources. It kills at least 500,000 infants each year where the mothers were not immunized and over 70 percent of these deaths observed in just 10 tropical Asian and African countries. It is also reported that

15,000 to 30,000 unimmunized women die each year due to maternal tetanus resulted from postpartum postabortal or post-surgical wound infection with *Clostridium tetani* (Fauveau, 1993).

Reports indicated that in Pakistan 270,000 neonatal deaths were annually observed and 60 percent of them occur during the first week of life. This rate of deaths is ten times higher than that of United States and other developed countries (Malik, 2001). Data available from hospital and limited number of community showed that 82% births take place at home which face this disease. Pakistan currently has the third highest burden of death owing to neonatal tetanus in the world. The World Health Organization estimated that 26,400 neonates died of tetanus in 1997 (Ali, 2001).

Comparison with the developed countries:

There is a great difference in incidence of tetanus neonatorum in developing countries and developed countries shown by following data about USA. In USA, NT is rare, there was no case of tetanus among neonates during period 1985-86, five infants with N.T. were admitted to Baylor affiliated hospital in Houston

in 30 month period beginning October 1975 (DHS, 1992). According to WHO in some developing countries the mortality rate due to NT is very high (Table 1), in Pakistan it was 4.08 per thousand births (1999 WHO estimates)

Table 1. Some maternal neonatal tetanus (MNT) countries in order of estimated NT deaths (1999, WHO estimates)

S#	Country	Estimated NT		Mortality rate (per 1000 live birth)
		Cases	Deaths	
1	India	65,291	48,578	1.99
2	Nigeria	46,064	34,583	6.77
3	Pakistan	28,882	21,619	4.08
4	Ethiopia	17,875	13,406	4.47
5	Bangladesh	13,575	10,386	3.09
6	Yemen	3,012	2,339	2.9
7	Sudan	2,880	2,209	2.3
8	Myanmar	1,754	1,205	0.93
9	Egypt	1,570	628	0.37
10	Zimbabwe	294	206	0.47
11	South Africa	20	12	0.01

What is Tetanus Neonatorum?

Tetanus is a neurological disorder, characterized by increased muscle tone and spasm that is caused by tetanospasmin, a powerful protein toxin elaborated by *Clostridium tetani*. Tetanus which occurs in neonates (upto 28 days of life) is called Tetanus Neonatorum.

Causative agent is *clostridium tetani*. It's a gram positive, anaerobic, motile rod/bacilli that forms oval, colorless, terminal spores and thus assumes a shape resembling a tennis racket or drumstick (Nelson et al., 1996). It has worldwide distribution and is found in soil, in the inanimate environment, in animal faeces and occasionally in human faeces.

Pathogenesis:

Clostridium tetani produces 3 toxins:

1. Spasmogenic toxin
2. Non-spasmogenic toxin
3. Hemolytic toxin

Toxins are released in the wound and bind to peripheral neurons terminal, enter the axon and are transported to nerve cell body in the brain stem and spinal cord by retrograde intra-neuronal transport. Then tetanospasmin migrate to reach the presynaptic terminal and blocks the release of inhibitory neurotransmitters e.g. glycine and GABA. This blocking by

tetanospasmin involves the cleavage of proteins critical to the proper function of the synaptic vesicle release apparatus. With this diminished inhibition, the resting firing rate of alpha motor neurons increase producing rigidity and spasm.

Incubation Period:

The incubation period of tetanus varies from 45-21 days (ansari 2001). In neonates the usual incubation period is 6-10 days, 7 days on average, the first symptom being seen about 7th day. Therefore tetanus is known as "8th day disease in the Punjab (Park, 2002)". Therefore, parents do not understand that the patient is suffering from NT.

Mode of Transmission:

It is mainly transmitted by contamination of wound with tetanus spores e.g. of umbilical stump after birth in neonate and contamination can occur during:

- i) Delivery when midwives use unsterilized instruments.
- ii) Circumcision
- iii) Unhygienic customs & habits of mothers

Signs & Symptoms:

The following symptoms can be observed:

- i) Child shows refusal to feed because of spasm of the muscles of jaw, which is called trismus (lockjaw)
- ii) Rigidity and spasm of body, the patient may assume an arched posture called opisthotonus
- iii) The so called sardonic smile of tetanus (risus sardonicus) result from the spasm of facial and buccal muscles (Nelson et al., 1996)

Causes of high incidence in Pakistan:

It's likely that 67.5% population of Pakistan is rural (PRB, 2003). So this has following possibly related consequences.

1. Poor socio-economic status
2. Maternal or paternal illiteracy
3. Both of above factors contribute to an unhealthy attitude the immunization of mother for tetanus and correspondingly high rate of neonatal tetanus. According to WHO estimations overall, the percentage of pregnant women receiving tetanus immunization remains low (52%) [Ali, 2001].

4. Lack of awareness of mothers about ante-natal care and maternity services.
5. poor communication skills by health workers to mothers or caretakers that leads to more dropped out cases, that is why it is called "silent killer" or "invisible killer".
6. The high percentage of home deliveries unattended by skilled care, 80% of deliveries taking place at home where "Dais" attend between 65% (urban average) and 90% (rural average) of all births (Ali, 2001). These "Dais" lack of the capability to handle the delivery by hygienic means and often are unaware about the common danger signs. Consequently, unhealthy neonatal practices like:
 - i) Cutting of the umbilical cord unhygienically.
 - ii) In some areas application of animal dung to the umbilical cord for healing purposes has been reported.
 - iii) In male children still another risk factor is circumcision with unsterilized instruments, further enhancing the risk of getting neonatal tetanus.
7. Inadequate funding
8. Inadequate surveillance tools
9. Inadequate supervision of traditional birth attendants.

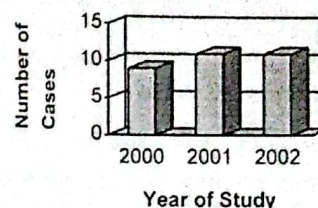
Material And Methods:

The study was carried out at Allied Hospital Faisalabad (AHF) using the available information in the record branch of the hospital. This study consisted of the total number of patients affected by the neonatal tetanus during 2000-2002, their sex, patients status, socioeconomic conditions, place of deliver, place of residence, cases attended by skilled or unskilled person. All the collected data were summarized and shown in results.

Results:

The total number of cases studied were 32 during 2000-2002 which favours a high incidence of this disease in Pakistan. It indicated that number of cases increased with the passage of time (Fig-1a).

Fig.1a Total number of cases of neonatal tetanus observed during 2000 to 2002 at Allied Hospital Faisalabad



It is also recorded that number of cured person increased with the passage of time (Fig.1b) but this number is very low as compared number of deaths during these years (Fig.1c). If the total number of cases and deaths during 3 years are taken, the case fatality rate 62.5%, which is very high showing that the disease is very fatal. Also it may be due to lack of proper management. As about NT it is said that case fatality rate of NT extends from <10% with intensive care treatment to 75% without it (Nelson et al, 1996).

Fig.1b Number of cases of neonatal tetanus cured during 2000 to 2002 at Allied Hospital Faisalabad

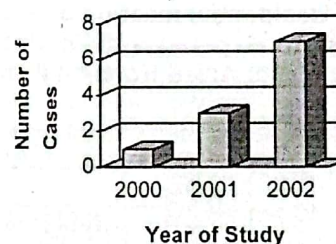
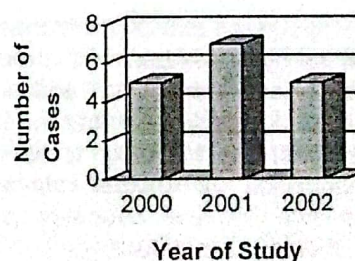


Fig.1c Number of cases of neonatal tetanus died during 2000 to 2002 at Allied Hospital Faisalabad



The sex distribution regarding the cases of neonatal tetanus affected persons indicated

that mostly male babies were victim of this disease were victim of this diseases (Fig.1d). so it can be concluded from the data that the male babies are at high risk of N.T. Possibly because they are exposed to contaminated instruments more than the female babies due to circumcision as most of the cases are attended by the traditional attendants (Dais).

From the data it is also clear that rural areas had more cases as compared to urban (Fig.2a). That may be due to lack of education and know-how about the medical care and following the old traditions like engagement of unskilled person for delivery cases.

Fig.1d Sex linkage regarding infection of neonatal tetanus in registered cases at Allied Hospital during 2000-2002

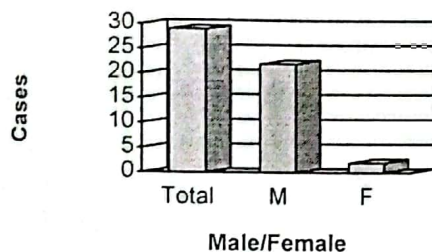
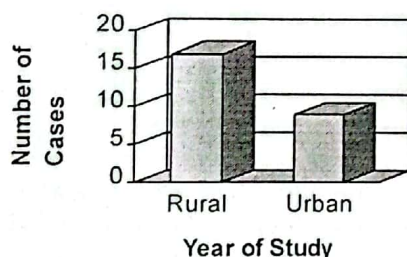
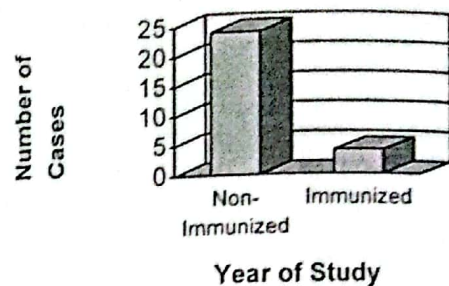


Fig.2a Residential location of neonatal tetanus affected patients registered during 2000 to 2002 at Allied Hospital Faisalabad



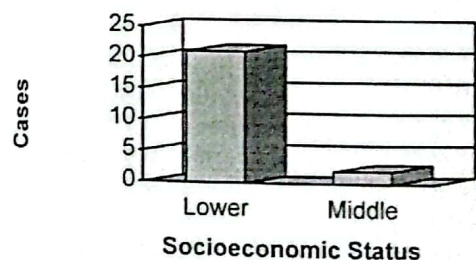
It was found that the incidence of N.T. is greater in the neonates born to the mothers who have not been immunized against tetanus (Fig.2b). Which is very clear that the immunized mother transfer the immunity to the neonates. So immunization of mother plays a great protective role for the neonates against he infection of *Clostridium tetani*.

Fig.2b Mothers involved in neonatal tetanus immunized or non-immunized registered at Allied Hospital Faisalabad



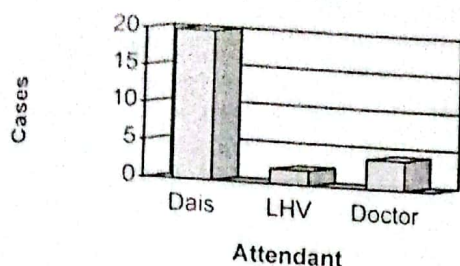
Similarly socioeconomic status also plays a significant role in the incidence of N.T. Data clearly confirmed higher number of persons affected belong to lower class (Fig.2c). From the data it can be concluded that mothers in lower class were not immunized and were not properly handled by the skilled persons at the time of delivery. That may be due to their economic conditions, they may unable to pay the charges of skilled persons, transport, medicines etc. the people having low socioeconomic status are not much educated and have not much knowledge of this disease which ultimately appeared in neonates of this class. These cases are rare in upper class and few in middle class which reflect about their socioeconomic status.

Fig.2c Socioeconomic status of patients affected by neonatal tetanus at Allied Hospital during 2000-2002



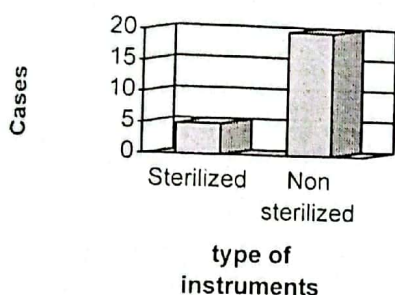
Results shown in fig.3a indicated that most of the cases are attended by the unskilled persons like Dais. Which indicated that people do not have much education and awareness about the neonatal tetanus, it also reflects regarding the economic status of the patients that they belong to lower class.

Fig.3a Delivery cases attendances regarding neonatal tetanus admitted at Allied Hospital Faisalabad



The instruments used in the delivery cases should be sterilized but the collected data indicated that in most of the cases the instruments used are non-sterilized, it was due to the unskilled persons like Dais who do not care the cleanliness and other infections caused by the non-sterilized instruments (Fig.3b)

Fig.3b Utilization of instruments for cutting of Umbilical cord in the affected persons admitted at Allied Hospital Faisalabad



Discussion:

There are gross variations in the incidence of N.T with reference to place of residence, socio-economic status, maternal immunization and sex of the neonates.

In the rural areas and especially with low socio-economic status the incidences are very high, almost double in rural areas as compared to the urban areas and about four times in lower socio-economic status than those having a comparatively good socio-economic status. Both of these things are actually related to the literacy rate and awareness in the parents about the health of their babies. The reports of UNICEF, WHO and UNFPA confirmed the above findings (WHO, 1999).

Maternal immunization again plays an essential role in the incidence of N.T. There is almost 4 times high risk of developing tetanus to the neonates born to non-immunized mothers as compared to immunized. This factor like the above two factors, is related to the educational status of the mothers. The mothers, who are living in urban area and have good socioeconomic status, have usually reasonable educational status and are, therefore, easily convinced to have immunization against tetanus and thus the incidence of N.T among the neonates born to these mother is very low. Mansoor (2001) also supported the above findings.

One can argue about the higher incidence among male babies is that male babies have a double exposure to infection. That may be at the time of cutting umbilical cord and at the time of circumcision. It is also a possibility for male preponderance that majority of the people belonging to rural areas and especially having lower educational status don't seek medical advice in case of female babies, and do not like to bear the burden of bringing them to hospitals which are usually situated at a long distance. However, this second possibility plays a minor role and the major role is played by the un-sterilized instruments as described above.

Alternatively educational status actually plays a significant role in the immunization of pregnant women against tetanus, adopting sterilized newborn care practices and in case of an infection, early seeking of medical aid.

Recommendations:

As discussed earlier Tetanus Neonatorum is a preventable disease and it is said, "prevention is better than cure". Following measures could be taken to prevent the neonate from tetanus:

1. As tetanus spores do not require a human host and are widely spread in the environment so we must maintain prevention efforts at high level. This is the way to keep the incidence of neonatal tetanus at low level.
2. For immunization of mothers, identify the high risk areas as its incidence is high in rural areas.

Algorithm for identifying high risk areas for Maternal Neonatal Tetanus(MNT)

If reported NT rate < 1 per 1000 live birth in that area



3. Now conduct immunization of female of child bearing age especially in high risk areas by active immunization through two properly spaced round of tetanus toxoid in order to produce long lasting immunity.
4. By training the traditional birth attendants, providing home delivery kits and educating pregnant women about the three principles i.e. "clean hands, clean delivery surface and clean cord care (clean blade for cutting the cord, clean tie for the cord and no application on the cord stump).
5. Increase educational status of female, counsel the mothers on general hygienic practices such hand washing.
6. increase communication skills of health workers
7. increase funds for immunization of target population
8. increase surveillance tools (WHO, 1999)

All these strategies will help to improve mainly the maternal health status and this will

indirectly improve the health status of neonates and children, that is our goal.

Acknowledgements:

We are heartedly thankful for the nice cooperation and sincere advise of Dr. Asghar Butt, Head of Pediatric Deptt. Allied Hospital Faisalabad and Mr. M. Asghar Dogar, Incharge of record branch Allied Hospital Faisalabad regarding this study. We owe our special gratitude to Mr. M. Saleem Shafi, Joint production Manager, SAANA Laboratories, Faisalabad, Pakistan, who very kindly compose and print this manuscript.

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Fetal Outcome in Diabetic Mothers
Binyameen
Department of Obstetrics & Gynaecology
Allama Iqbal Medical College, Jinnah Hospital, Lahore

Abstract

The study was conducted at the Department of Obstetrics & Gynaecology, Jinnah Hospital, Lahore. All pregnant mothers with diabetes mellitus who presented in antenatal clinic and labour room of Obstetrics & Gynaecology, unit-I of Jinnah Hospital over a period of six months were included in the study. Their blood glucose levels were monitored and appropriate treatment was offered. Fetal outcome was studied carefully. Data of 40 diabetic mothers and their newborns was collected. Out of 40 newborns, 20 (50%) of the newborns had macrosomia, five newborns had hypoglycaemia, five had hypocalcaemia, six were jaundiced, two babies had congenital malformations whereas five died. Strict glucose control during pregnancy has been shown to reduce morbidity and mortality in the infants. There is a four-to-five fold increase in the perinatal mortality rate among poorly controlled established diabetics. Treated gestational diabetics have the same perinatal mortality as normoglycaemic controls

Key Words:

Fetal Outcome, Diabetic Mother, Pregnancy

Introduction:

Data of 40 diabetic mothers and their newborns collected from Jinnah Hospital, Lahore over a period of six months was studied. 20 (50%) of the newborns had macrosomia. Five newborns had hypoglycaemia, five had hypocalcaemia, six were jaundiced, one baby had congenital malformations, whereas five died.

Diabetes occurs in 1% of women of reproductive age. Another 1–2% will develop gestational diabetes, the risk increasing in older women. Spontaneous abortions, candida vulvo-vaginitis and polyhydramnios are commoner in the poorly controlled diabetics. The combination of diabetes and pregnancy induced hypertension (in 12% of gestational and established diabetics), antepartum hemorrhage and urinary tract infection is of increased risk to the fetus.

Macrosomia occurs in 16–45% of babies born to diabetic mothers and is variously defined as fetal weight in excess of 4.5kg or birth weight above the 90th percentile for gestational age. Macrosomia predisposes to traumatic vaginal delivery and shoulder impaction.

Diabetics have a three-fold increase in the incidence of preterm labor; tow-third of cases are iatrogenic, the remainder are of unknown aetiology. Both beta-sympatho-

mimetics and corticosteroids cause hyperglycaemia; if indicated in diabetics, they may be used under insulin cover.

Patients and Methods:

This study was carried out over a period of six-months from January to June 2004 in Jinnah Hospital, Lahore. All mothers booked for delivery with in this period in the hospital were screened for diabetes mellitus. Sixty diabetic mothers were enrolled initially, out of which 40 could be completed. Each case had a complete history, physical examination, antenatal checkup record, and a laboratory data record. Laboratory investigations included haemoglobin, complete blood count, ESR, urine examination, ECG, chest x-ray, ophthalmoscopy, abdominal ultrasound, blood glucose profile with a glucose tolerance test where indicated in the mother. Similarly blood glucose, calcium, hematocrit, bilirubin, blood urea, urine for RBCs, radiological studies on spine and chest, abdominal ultrasound, ECG and echocardiography of the infant were carried out where required. All mothers were delivered in the hospital.

2 ml cord blood of the newborn was collected and anti-coagulated. Another 6ml blood was centrifuged and serum frozen. All babies were transferred to the neonatology along with samples. A complete physical examination was carried out and recorded.

All newborns were checked for blood glucose at ½, 1, 2, 4, 6, 12 and 24 hours. In those newborns whose blood glucose levels were less than 45mg%, the blood glucose levels were repeated every half an hour. After normoglycaemia was achieved in such cases, two hourly glucose estimation was done until several reading were above 40mg%. The levels were repeated 4-6 hourly till glucose was normal for period of 24-48 hours. Serum calcium was done at birth, 72 hours later and more often if less than 7mg%. Similarly, other investigations like bilirubin were repeated as required.

Results:

Records of 40 mothers and their newborn infants were completed out of a total enrollment of 60 cases; majority of the mothers (80%) were multipara, 20% being primigravida. They ranged in age from 20 to 45 years. Gestational diabetics formed the largest group delivered by caesarean section. More male babies (55%) were born in our study than females. Macrosomia formed the commonest morbidity in the study, seen in 20 (50%) of the infants; only 4 (10%) of the babies had low birth weight (<2.5kg). Rest of the babies were appropriate for gestational age (40%) (Figure-I).

Signs and symptoms included: jitteriness, which was seen in 7 (16%) of the newborns. Jaundice was noticed in 6 (14%) babies. Three babies had excessive sweating, two were polycythemic, and one baby suffered from fits. One baby had respiratory distress syndrome and died on the seventh day. Congenital malformations – anencephaly and cyclopia were noted in two babies. 5 (12%) of the newborns had hypoglycaemia and out of these three were symptomatic. Again 5 (12%) newborns had biochemical evidence of being hypocalcemic and four were symptomatic. Four (10%) babies suffered from culture proven neonatal sepsis, two had klebsiella and one staphylococcus aureus and E coli infection. Five neonates died, two because of septicaemia, two because of the associated anomaly, and one with respiratory distress syndrome (Figure-II, III).

Discussion:

Macrosomia is a major complication of diabetes. Fetal hyperinsulinism has been

proposed as a cause of macrosomia. The incidence of macrosomia in infants of diabetic mothers has been reported to be 8%. In our study the proportion is much higher, that is 50%; poor glycemic control in our population seems to be responsible. The figure of 50% correlates well with that of 46.6% in another study from the developing world¹. The latter have proposed that maternal obesity and orally induced hyperglycaemia and diabetes of pregnancy provide early markers for macrosomia and make it possible to envisage prophylactic treatment. Maternal blood glucose control in the first trimester has been proposed as an important determinant of birth weight of babies².

Our study reveals a high percentage of caesarean deliveries (54% of all cases). The incidence of caesarean section was significantly higher in pre-gestational diabetic mothers than in gestational diabetics in a large study³. In another study by Hansen and Persson, the rate of caesarean section of 45.2% in 491 insulin dependent diabetic pregnancies was more than four times higher than in normal population⁴. Infants of diabetic mothers have an increased risk of developing malformations of the CNS, cardiovascular system and skeletal system. Congenital anomalies were few and seen in 5% of our babies. In a large study by Woon et al. anomalies occurred in 15.5% with severe and major malformations in infants of long standing diabetic mothers. The low rate in our study could be due to increased fetal losses. Indeed in a large study 52 of the 215 (24%) insulin dependant diabetic women who enrolled before 9 weeks of gestation had spontaneous abortions⁵.

Omori et al. found that while the perinatal mortality of infants of diabetic mothers in Japan decreased from 10.8% in 1971-5 to 1.1% in 1986-90, the incidence of congenital malformations remained at 5.7 - 8.2% during the entire period⁶. Aucott et al revealed that even in rigorously managed insulin dependant diabetic mothers congenital malformations appeared in 7.7% of infants. The reason may be that the types of malformations most commonly seen in these infants (e.g. congenital heart disease, caudal regression syndrome) occur embryologically before 7 weeks of gestation⁷. To have an influence on the congenital anomalies,

euglycemia must begin in the pre-conceptual period and continue throughout organogenesis.

Perinatal mortality in our study was 12.5%. The risk of perinatal mortality is increased in infants of diabetic mothers⁸. Symptomatic hypoglycaemia was 6% in our study. Hypocalcemia, which may be due to suppressed neonatal parathyroids, preterm labour and respiratory distress in infants of diabetic mothers was present in 12.5%.

Proper management of diabetes in pregnancy has shown to be associated with a reduction in the rate of neonatal hypocalcemia. One case had respiratory distress and died on fifth day of life.

No baby in our study had cardiac malformation but a sequential follow-up is required to detect abnormal delay of diastolic filling in infants of poorly controlled diabetics⁹.

Join Clinic reported an incidence of 31% of respiratory distress syndrome in infants of diabetic mothers declining to an average of 5.5% in the same clinic with better glycemic control.

There is three-fold increase in perinatal mortality in gestational diabetic mothers who are not identified¹⁰.

Conclusion:

Most of the mothers in our study had gestational diabetes. The surgical intervention, caesarean section and macrosomia were more common in the mothers with poor glycemic control.

Strict glucose control during pregnancy has been shown now to reduce morbidity and mortality in the infants. Because there is significant increase in perinatal mortality in gestational diabetic mothers who are not identified as well as substantial increase in perinatal morbidity mainly macrosomia (30–50%) and its related complications, it is reasonable to assume that establishment of universal screening and proper treatment will reduce the social and financial burdens of managing the results of untreated diabetics.

Recommendations vary but it is generally agreed that all mothers should undergo screening at least once during their pregnancy for increased detection of diabetes. This recommendation needs enhanced attention of obstetricians.

There is a four-to-fivefold increase in the perinatal mortality rate among poorly controlled established diabetics. Treated gestational diabetics have the same perinatal mortality as normoglycaemic controls. Congenital anomalies are the most common cause of death (approximately 5%). Death from all causes except congenital abnormalities (40% of deaths) are falling. Neonatal morbidity (respiratory distress, hypoglycaemia, hypocalcaemia, polycythemia, jaundice and cardiomyopathy) occurs in 30 – 50% of newborns of diabetic mothers.

Figure- 1
Distribution of Weight in Infants of Diabetic Mothers

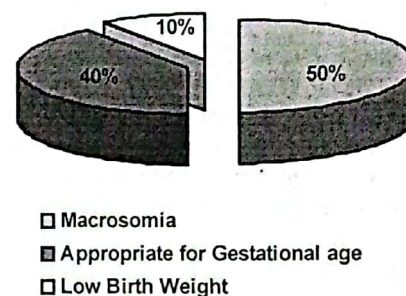


Figure-2
Graphical presentation of symptoms in infants of diabetic mothers

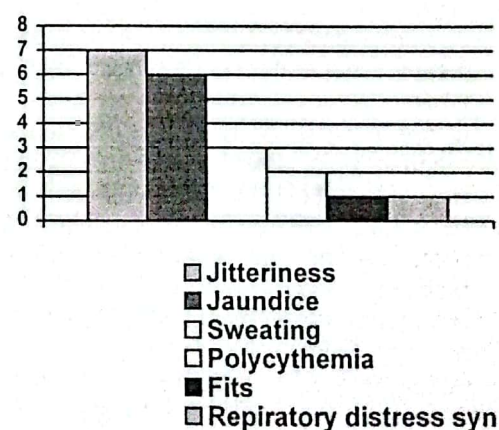
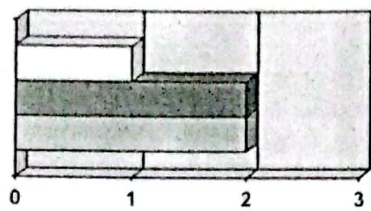


Figure-3 Perinatal Mortality



- ☐ Respiratory distress syndrome
☒ Neonatal Sepsis
☐ Congenital Malformations

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Evaluation of Health Hazards of Metallic Press Workers Working in Shahdara Industrial Area

Nargis Rehana Malik
Department of Community Medicine, F.J.M.C., Lahore

Abstract:

Occupational health is one of the important disciplines of public health. The occupations are of many different types with various categories. Metal works is one of the occupations to which the man is associated after the stone-age. Metal works involve many processes right from sand blasting, ore concentration, melting and smelting, moulding and finishing of the materials. Another series of process is the production of metal sheets, cutting, punching, die moulding and pressing. Among these occupations a survey was conducted in Shahdara area for the evaluation of health hazards of metal press working workers in this area. Results show that nearly all of the workers out of a sample of 200 were ignorant about the safety practices. It resulted the chopping of finger/fingers/thumb of 49% workers. The commonest cause was the lack of supervision which was due to the reason that the in most of the cases it was a family business, hence the concept of supervision never exists. It was suggested that safety act, child labor abuse act and mechanical inspection of press may be executed strictly. A collaborative effort is required to reduce the rate of such type of accidents.

Introduction:

Among many occupations metal works is also an important trade in Pakistan. The city of Lahore is surrounded by small and medium size industries. Shahdara town is one of the thickly populated industrial area. In this area various small industrial units are working and metal presses constitute its major portion. Cutting, moulding, rolling, and punching presses are the common types which are working in this area. Some of these presses were installed before the creation of Pakistan. Since then they are producing mechanical click locks, dye cut metal pieces, moulds etc. Majority of them are the mechanical metal presses.

A characteristic distinguishing feature of a mechanical metal press is that it works on an intermittent reciprocating system and so requires a clutch. In hand-fed machines the clutch is arranged to open at the end of a stroke while work is fed and removed. If for any reason the clutch fails to disengage at that time, or the crankshaft fails to come to rest, a further unexpected stroke will be made. This is known as a repeat stroke. If the clutch has disengaged but the crankshaft fails to come to rest at its normal stopping position the machine may continue over the top of the stroke and the tools may fall under gravity. This is known as over run.

Accidents at mechanical presses usually occur when a worker's hand is between the tools as they close, either during unexpected stroke because for some reason the worker has failed

to remove his hand, or during a repeat stroke or over run condition when the worker is feeding or withdrawing work from between the tools. The best method of preventing such access is to use enclosed tools which do not permit access to the trapping area, but where this is not possible the tools should be guarded by a fixed guard that prevents all access by any part of a hand or finger to the tool space. Enclosed tools are usually practicable when blanking operations from trip are carried out and when more than one operation is combined in one set of tools. Enclosure is generally achieved by making the stripper plate which is attached to the tools sufficiently thick to contain the punch to the top of its stroke, and by ensuring that fingers cannot reach the punch through the feed opening below the stripper plate. Where enclosed tools are used, care should be taken to ensure that the length of the stroke cannot be increased to allow the punch to move clear of the stripper plate. Fixed guards must be strong, rigid and effectively secured.

It may, however, be necessary for work to be fed to, or removed from, the tools by hand. In this case either an interlocked guard or an automatic guard may be used. An interlocked guard consists of a frame with a movable gate in the feed opening. The gate is connected to an interlock with the clutch latch or extractor (or sliding member in the case of some guards for jaw clutch presses), and to a guard control which keeps the gate closed until the crankshaft has reached top dead centre and has stopped.

In some cases there is also an arrestor brake which can be connected to the gate of the interlocked guard and which will arrest the movement of the flywheel and crankshaft before the ram can descend sufficiently for the tools to trap fingers if the press makes a stroke, from any cause, with the gate open. When such an arrangement is fitted, it is permissible, if the performance of the arrestor brake is adequate, to install the guard in such a way that the gate can be fully opened shortly after the end of the down stroke; the arrestor brake should then give full protection if the crankshaft starts to over run the top dead centre position. This type of guard is more suitable for the smaller type of press.

For larger, long stroke presses an automatic guard can be used which will push or pull a hand clear before anything happens. One form of automatic guard consists of an arm that sweeps across the front of the press as the tools close and in so doing pushes a worker's hand away from the trapping point.

An evaluation survey was conducted to assess the health hazards among the metallic press workers working in Shahdara Industrial area.

Methodology:

The survey was questionnaire based. A sample of 200 workers was drawn out of total lot of 2100 workers. The sampling was based on random method and evaluation of Health Hazards was carried out on Kinnson and Steel injury categorization method.

Results and Discussion:

Pressing is one of the oldest industrial process. It was the method by which the ancients moulded their bricks and struck their coins, although the machinery used consisted only of the simple lever. Today the process of pressing is used to mould or cut many different material. The present survey carried out about the Health Hazards present in the metal press workers of Shahdara Industrial Area evaluates the injuries happened to them. Out of 200 workers 192 were right handed and 8 were left handed. Among the right handed workers 97 workers had involved at least once in an on job accidents. Out of this total there were 11 workers whose all the 4 fingers were chopped, 23 workers had got their 2 or 3 fingers chopped, 19 workers had lost their own finger and the

remaining lot had a nail injury or a chip of injury of any of their finger or thumb. Out of left handed 8 workers only one worker had lost his one finger (index finger) and the nail of one worker was chopped during the job. This survey shows that the rate of accidents at mechanical presses is quite high and as it exists the safety measures taken by the workers were either very poor or absent in many cases. When the workers were asked about the safety measures at their job they were found completely ignorant about concept of safety and in most of the cases the workers had accepted the injuries as if it is the ultimate fate of the press workers. It is further observed that in more than 95% cases it is a family business and all the family members including a 5 year child is also involved in the business. As the relations dominate, the concept of supervision is completely absent. This type of situation also causing the majority of accidents. The results of survey reveal that accidents are the major health hazards among these workers. As no chemicals or other abrasive processes are involved so the possibility of existence of other types of health hazards is diminished. The lack of education is also one of the cause of accidents. The workers cannot read the instructions printed on machine. The awareness about health hazards also lacks. The results shows that approximately 13% of the injuries are disabling. In 38% cases the injuries were semi disabling. If the same conditions are allowed to prevail in future it is rightly indicated that a considerable portion skilled labour will be disabled. Keeping the results in view it is suggested that :-

Suggestions:

1. The formulation of health and safety at work Act may be initiated at the earliest at Government level.
2. The child labour abuse may be dealt with properly in this area.
3. Mechanical inspection of the presses for safety purposes may be executed as per rules and regulations prevailing for this purpose.
4. A collaborative effort may be made for the improvement of Occupational Health Education status of the workers involving Public Sector, Private Sector, like NGOs, Industrial Owners, Labour Leaders etc.

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**Development of Pre-Coded Pregnancy
Monitoring Card for use in Teaching Hospitals**
Musarrat Mansoor, Zubair Ahmed, Muhammad Saeed

Abstract:

Antenatal care in teaching hospitals of Pakistan aims to identify high-risk pregnancies and to educate the trainee doctors and paramedics. Unfortunately the hospitals identifying such high-risk pregnancies do not have comprehensive program for managing them. A team of experts reviewed the antenatal cards being used in different local and some international institutions, to develop a special design for monitoring the high-risk pregnancies. The card was pre-tested to review the types and magnitude of local risk factors so as to optimize the clinical approach. At Shaikh Zayed Hospital this card was introduced to monitor pregnancy and its outcome. The card carries a summary to highlight prenatal delivery and puerperal periods. It has been found useful in situations where the pregnant women utilize domiciliary services of a local facility. The card is pre-coded and can easily be analyzed through computer. The data thus obtained serves good purpose in planning, organizing and evaluating health care system.

Introduction:

In Pakistan rate of maternal mortality is 8 per thousand births¹. A survey carried out by WHO in 1990 shows maternal mortality rate as 340/100,000 live births.²⁻⁴ High risk prenatal conditions are not met with same prenatal care which they deserve. Maternal and child health is a burning issue nationally and internationally. WHO is working with its all resources on this aspect of health delivery system as reduction of maternal mortality is one of the major goals of several recent international conferences because it is becoming the main hindrance for the fulfillment of WHO promise, "Health for all by the year 2000"⁵

Obstetric is not much a neglected field by the planners but the irregularities practiced in referring the high-risk cases to the referral hospitals are causing disturbances. Hospitals are over burdened with the uncomplicated obstetric cases on one hand and cases worth high level prenatal care are neglected on the other hand. This chaos is denying the vital objectives of our health policy, causing its failure, which is on its peaks on success in the developed countries. Therefore it is important to adopt a health policy which should give coverage to women of reproductive age according to their need of prenatal conditions.

Referring high risk cases to the referral hospitals is one measure in the desired direction to maintain the essence of our health delivery system but the question arises, "How to identify the genuine high risk cases and what are the basic criteria for referring them to the referral hospitals". To answer this we observed that the

system of identifying high-risk cases is streaming in different directions. There is no uniform method adopted for collecting information about prenatal cases coming to the hospitals and accordingly to picking up high risk cases to be looked after in referral hospitals. Antenatal card of each hospital is different from the other thus defective in one way or the other. No reliable and useful information can be obtained from these documents on national level and health norms of our population cannot be appreciated. Recent advances in computer technology provide improved means for the collection of information for the prenatal database. They depend principally upon online entry via a computer terminal.

Therefore in the interests of implementing a health policy at national level and from research point of view, it is important that a system of data collection be introduced uniformly in all the referral and DHQ hospitals of the country. The availability of such effective procedures for information gathering demands a careful review of the purposes, content. An antenatal card incorporating comprehensive information regarding the socio-medical aspects of the prenatal patients should be developed methodically and introduced in all the referral and DHQ hospitals.

Measures based on scientific lines will lay foundations for implementing a health system at national level and removing the obstacles in the practical delivery of health care.

Methodology:

In order to develop computerized obstetric information system following steps were taken:-

A. Document Development Phase

1. Already existing documents at Shaikh Zayed Post Graduate Medical Complex and other teaching hospital in the form of antenatal card and indoor obstetric patient's files studied thoroughly and compared with the internationally implemented obstetric information documents.
2. The missing information was noted.
3. A comprehensive antenatal card and its feasibility for computerization was prepared.
4. The pretest of antenatal card was conducted at Gynae/Obs out patient department of Shaikh Zayed Post Graduate Medical Complex.
5. Analysis of the data of pretest for the finalization of antenatal card was done.
6. Problems observed in filling the card by the doctors collecting the data and their recommendations were taken in consideration.
7. Suggestion from experts of Gyn/Obs field were invited.

B. Computerization Phase

1. Computerization of the document (antenatal card) which included:-
2.
 - a. Installation of independent computer cell and hardware in Gynae and Obs.department.
 - b. Preparation of computer code sheet for data transfer and quality control
 - c. Software development (Program/packages) for the above mentioned project for the analysis of Medical, Statistical, Lab. Examination, Socio-economic data and Graphical representation.
 - d. Training of KPO's on developed software.

3. Problems faced by the computer department and their solutions and recommendations by computer experts were sorted out..

C. Data Collection Phase (in Shaikh Zayed Hospital)

- D. Implementation of antenatal card at Gynae/Obs OPD at Shaikh Zayed Post Graduate Medical Complex and data collection started.

E. Data Analysis and Results.

The antenatal card is shown below:

The information collected includes the basic socio-demographic information with past and recent obstetric history; medical history including PIH; gestational diabetes, and detail family history. The next page of the card includes documentation of general physical and obstetric findings during the follow up visits. There is also space for any hospitalization during the current pregnancy. The third page is for routine and other laboratory investigations, ultrasound scan and summary space is for any positive finding or risk factor. Then there is plan of the current pregnancy. The last page gives information about the labour, delivery, puerperium and the baby.

The first 2000 cases were analyzed by computer and of these cases 1237 had one or more risk factors present at the time of booking. For risk factors we adopted the list proposed by Carroll et al.⁶

Following is the list of risk factors present at the time of booking. Detail breakdown is shown in Table 2 below.

The frequency of various risk factors in 2000 women at the time of booking is given in the following table.

Risk factors	No.	%
Age		
<18 years	14	0.7
>35 years	22	1.1
Parity		
Primary para >35 years	4	0.2

Grand multipara	58	2.9
Abortion		
Spontaneous >2	169	8.45
Induced >2	162	8.1
Unsure of dates	98	4.9
Past History		
Previous Cesarean sections	234	11.7
Preterm delivery	87	4.35
Baby Weight		
<2.5 kg	170	8.5
>4 kg	120	6.0
Family History		
Diabetes	568	28.4
Congenital abnormalities	72	3.6
Blood pressure 140/90 mm of Hg	82	4.1
Maternal weight		
>90 kg	22	1.1
<45 kg	95	4.75
Maternal Height <152 cm	335	16.75

Most of the findings are unremarkable but some of them are of obstetric significance which need to be looked after during antenatal care and at the time of delivery.

Maternal age less than 18 years was seen in 7% and 1.1% mothers were above the age of 35 years.

Elderly primiparas were .2% and grand multipara were 2.9%. Spontaneous abortions two and more were seen in 8.5% women and induced abortion were seen in 8.1% women. History of previous Cesarean section was found in 11.7% women and preterm delivery was seen in 4.4% mothers. Family history of Diabetes was found in 28.4% mothers.

Discussion:

The main purpose of routine antenatal care is to identify risk factors which call for specification to avoid further problems for the mother or child. Failing to identify such risk factors or to take appropriate action when they are known to be present, is one of the commonest error in obstetric practice.⁷

Antenatal care is medical screening which is applied to a normal physiological even while women may need medical attention at some point during pregnancy. So most of the findings will be negative. It is therefore important that an alerting system must be there to pick up uncommon but important risk factors highlighting the positive information as their primary need is for sympathy and respectful care.

The summary space is utilized by positive factors only. This has the advantage of being far more compact than the entire card and being much easier to read. If the risk factors are present, this summary will give all the detail highlighting of the most serious problems.

In conclusion we believe that the highlighting of risk factors will be an important factor of computerized obstetric data collection system which is designed to capture all information about a pregnancy from the time of booking onwards.

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The Study of Feeding Practice of Mothers to Their Children Aged 4-12 Months, District Layyah, Punjab

Syed Sakhawat Ali

Faculty of Environmental & Occupational Health, Institute of Public Health, Lahore

Khurram Ahmed Faridi

Department of Pharmacology, Fatima Memorial Hospital College of Medicine & Dentistry, Lahore

ABSTRACT

A sample of 200 mothers having children 4 to 12 months of age of either sex was selected from children ward and out door of DHQ Hospital, Layyah by method of snowball sampling technique. They were interviewed with the help of a preformed questionnaire and weight versus age was used as a parameter for the assessment of the nutritional status of the children of the mothers in the study population. The respondents were coded for confidentially purposes. There were 62% male and 38% female children of the 200 mothers in the study population. General overall picture indicated that: Mother milk given as Ghutti=5%, other than human milk (honey, glucose etc.) =95%, weaning started at 4 month of age =10%, weaning at 5 – 8 months =30%, weaning started after 8 month =60%, beside milk other food being given =40%, At present type of milk being given i.e. mother milk =50%, mixed (mother's & cow's milk) =25%, animal milk (cow's milk) =15%, tin Pack milk =10%. As that first weaning food given to child: Tin pack dalia =25%, Home made dalia =10% Cow's milk + Banana=05%, Home made bread (chapatti)=60%. Nutritional status of children: 15% children were healthy. 85% were malnourished, of which 75% were suffering from 1st degree malnutrition 10% from 2nd degree malnutrition

Introduction:

As per sociological surveys and reports, in Pakistan more than 80% of mother breast feed their children initially. But on doing a national survey it was found that only 20 – 30% of mother were giving their newborns only breast milk (1, 2).

According to National Survey Report 1985-87, 59.5% Pakistani pre-school children suffering from malnutrition and only 0.5% of them are above the 90% standard weight for their age (2,3).

There are certain practices which interfere with optimum breast feeding. For instances, the practice of giving pre-lacteal feeds, these include:- Honey, Water, Glucose, and Fresh animal milk.

All these are called "Ghutti"

Some time harmful pre-lacteal like laxatives are also used to clean the intestine of the new-born.

Other practices like giving mixed feeding (water or other milk) in addition to breast feeding is also very common. All these interfere with the optimum breast-feeding and can lead to lactation failure. Since this involves

using bottle, to feed babies, resulting in contamination, causes diarrhea (3, 4).

Socio-economically poor mothers usually over dilute milk when feeding their babies, thus resulting in Malnutrition (5).

Other harmful practice: mother taking restricted diet during lactation, discontinuing breast feeding before child is 2 year of age, also contribute to malnutrition and increased infection in the infants (5, 6, 7).

The present study was carried out at children ward and out door, DHQ Hospital Layyah to study the feeding practice of children of age 4 – 8 months by mothers. The information was collected by interviewing 200 mothers by snowball sampling technique recorded on pre-designed questionnaire and data was analysed on EPI info.

Material and Methods:

The design of present study was exploratory and employed on epidemiological observation method, specifically a cross-sectional approach or point-in-time observation survey. Present cross sectional study was conducted to study the feeding practice of children 4 to 12 months of age by their mothers. Mothers having children 4 to 12 months of age of either sex, attending children

ward and out door of DHQ Hospital were included in the study. The period of study was three months which started from March 1st to 31st May, 2003.

District Layyah: The District Layyah is located in the South Punjab, between the Indus and Chenab rivers and is the most remote area of the province. District Bhakkar is in its North, Indus River runs in its West, District Jhang in its East and District Muzaffar Garh in the South. The area of this district falls in the climatic zone of sub-tropical continental plains. It consists of the rural and urban areas of towns of Layyah, Kot Sultan, Karor, Fateh Pur and Chowk Azam.

A sample of 200 mothers having children 4 to 12 months of age of either sex, including both urban and rural inhabitants of district Layyah was selected by snowball sampling technique. In sociological research this sampling technique is used which provides a coherent and rigorous ascending methodology per studying hidden population (8). A snowball sample is developed through a chain of referrals that are made within circle of people who are connected by one or more links of relationship and often used when insider knowledge may be required to identify individuals for study (8). Three stages (waves) were conducted 110 sample respondents (mothers) were interviewed and their children were weighed by weighing in stage I and II, 90 were in stage III for a total of 200 respondents, representing rural and urban areas within the district Layyah. The mothers were interviewed after obtaining their verbal consent. The information was recorded on a pre designed questionnaire. The anthropometric measurement used to assess the nutritional status of the children was weight for age (7, 10). According to WHO the weight for age is considered as accurate parameter to assess nutritional status of children (8, 10, 11). Weight of the children was recorded with the help of Lady Health Visitor by weighing scale. Data was compiled, tabulated and analysis was done on EPI Info. The respondents were coded for confidentiality purposes.

Assumptions:

Study researchers assumed that all data obtained from cross-sectional survey interviews was accurate or at least did not contain systematic errors or bias (8,9).

Researchers also assumed that format, criteria, methodology utilized for present study, could be generalized and implemented in other areas outside of the District Layyah in Pakistan.

Results:

The major findings of the present study are that out of 200 mothers children (4-12 months of age) 62% male and 38% female, 30 (15%) children were of normal weight for their age, 170(85%) were malnourished out of which 150(75%) had first degree malnutrition and 20(10%) had 2nd degree malnutrition. None of them was suffering from 3rd degree malnutrition only 22(11%) mothers were illiterate. To 5% children only mothers milk was given as "Ghutti", to 20(10%) weaning was started at the age of 4 months by their mothers.

Table-1 Shows that 55% mothers having child upto 4 month, 24% 4 to 8 month, 21% 8 to 12 month of age.

Table – 1: Age of the children

Age in Months	Frequency (f)	Percentage (%age)
Upto 4	110	55%
4 to 8	48	24%
8 to 12	42	21%
Total	200	100%

n = 200

Table 2 Shows Maternal Educational Status: 22 (11%) of the mothers were illiterate. 44 (22%) mothers had Primary, 50 (25%) had Middle, 80 (40%) had Matric education and 4 only (2%) had education above Matric.

Table – 2: Educational Status of Mothers of the children.

Maternal Education	Frequency (f)	(% age)
Illiterate	22	11%
Primary	44	22%
Middle	50	25%
Matric	80	40%
>Matric	4	2 %

n = 200

Table – 3 shows that first food (Ghutti) at birth given to child 10 (5%) mother milk, 150(75%) honey, 20(10%) glucose and 20(10%) cow's milk.

Table –3 First Food Given to the Children – Ghutti

Ghutti	Frequency (f)	Percentage (%age)
Mother Milk	10	5%
Honey	150	75%
Glucose	20	10%
Animal (cow's) Milk	20	10%
Total	200	100%

n = 200

Note: -Honey, glucose and cow's milk (ghutti) was on advice of Grandmother=95%. By other elderly member of family = 5%

Table – 4 shows at present 100(50%) mother milk, 50(25%) cow's milk and mother milk (mixed), 30(15%) cow's milk and 20(10%) tin pack milk were having given to the child. 50(25%) of the mothers never breast-fed to the child at the age of 12 months.

Table – 4 At present type of Milk given to Children

Type of Milk	Frequency (f)	(%age)
Only Mother Milk	100	50%
Mixed (Mothers + cow's Milk)	50	25%
Animal (cow's) Milk	30	15%
Tin Pack Milk	20	10%
Total	200	100%

n = 200

Table – 5 reveals the fact that weaning started to the child 20 (10%) at 4 months, 20(10%) at 6 month, 40(20%) at 8 month and 120(60%) at the age of 9 to 12 month. 120(60%) of the mothers not started weaning upto 8 month of age to the child

Table – 5 The age of children at which weaning started by the mothers.

Age of child	Frequency (f)	(%age)
At 4 month	20	10%
At 6 month	20	10%
At 8 month	40	20%
Not started upto 8 month	120	60%
From 9 – 12 month	120	60%
Total	200	100%

n = 200

Table – 6 shows 50(25%) Tin Pack Dalia, 20(10%) home made dalia, Cow's milk and Banana 10(5%) was given as first weaning food by the mother to child while 120(60%) home made bread (chappati) was given.

Table – 6 First Weaning Food given to Children.

First Weaning Food	Frequency (f)	(% age)
Tin Pack Dalia	50	25%
Home made Dalia	20	10%
Cow's Milk + Banana	10	5%
Home made bread (Chappati)	120	60%
Total	200	100%

n = 200

Table – 7 shows besides milk 50(25%) home made food and 30(15%) tin pack food was given to child. 120(60%) of mothers were not giving any other food besides milk to child.

Table – 7 Besides milk other food given to children.

Food given	Frequency (f)	(%age)
Home made solid food	50	25%
Tin Pack solid food	30	15%
Not giving any other food besides milk	120	60%
Total	200	100%

n = 200

Table – 8 shows 30 (15%) children were of ideal (normal) weight for age, while 150 (75%) had 1st. Degree and 20 (10%) had 2nd degree malnutrition.

Table – 8 Nutritional status of the children (weight for age)

Nutritional status	Frequency (f)	(%age)
Normal	30	15%
1st degree Malnutrition	150	75%
2 nd degree Malnutrition	20	10%
3 rd degree Malnutrition	NIL	0%
Total	200	100%

n = 200

Discussion:

In the current study a sample of 200 mothers has been studied. There were 62% male and 38% female children of the mothers in the study population. 11% of the mothers were illiterate, 22% primary, 25% middle, 40% were matric and only 2% of the mothers had education above matric. They have children 55% upto 4 month, 24% 8 month, 21% 8 to 12 month of age (Table 1, 2). Regarding the first food (ghutti) 10 (5%) mother milk, 150 (75%) honey, glucose 20 (10%), animal (cow's) milk 20 (10%) given to the child (Table - 3) grand mother / elderly women in the family had a profound role in initiation of Ghutti to the child and weaning. At present only mother milk 100 (50%), mixed (mother's and cow's) milk 50 (25%), cow's milk 30 (15%) and tin pack milk 20 (10%) given to child. 50 (25%) of the mothers never breast-fed to their children at the age of 12 months (Table - 4). This was due to lack of their knowledge about breast feeding and illiteracy of mothers. Weaning started 20 (10%) at 4 month, 20 (10%) at 6 month, 40 (20%) at 8 month, 120 (60%) from 9 to 12 month of age. 120 (60%) of the mothers not started weaning upto 8 month of age to the child (Table- 5). This was also due to poor facilities of health education to the mothers in the area by the health professionals. Tin pack Dalia 50 (25%), home made dalia 20 (10%) cow's milk + banana 10 (5%) was given as first weaning food to the child (Table- 6). Beside milk 50 (25%) home made, 30 (15%) tin pack food while 120 (60%) of mothers were not giving any other food besides milk to the child (Table - 7).

As regards the nutritional status 30 (15%) children were of normal weight for age. While 150 (75%) had first degree malnutrition and 20 (10%) had second degree malnutrition (Table - 8). Results obtained are similar to finding of the study conducted by Rahimtoola R. Majid et al (7). The present study's results obtained are at variance from those of European standards and this can be attributed climatic conditions, good state of health of them. The current study's findings disclosed the fact that malnutrition in children 4-12 months of age is not a result of a single factor, there are multiple factors, which play an important role in determining their nutritional status. These include maternal education, provision of health education facilities to the mothers by health professionals about children

feeding, breast feeding, and weaning at proper age of (4 months) to the child. The grand mother/elderly member in the family have also profound role on initiation of ghutti and weaning.

Conclusion:

During the present research study it has been found that the pre-lacteal feed known as "ghutti" is given on advice of Grandmother / Elderly member of the family, even in educated mother these elderly member have profound role on initiation of ghutti and weaning.

The children who has been given mother milk as ghutti and has been weaning at 4 - 5 month of age are found healthy and has normal weight for age, these were 30 (15%).

75% of the children were malnourished of G-I and 20 (10%) of G-II. These were those who has been given mixed feed up to the age of 4 month and has been weaned after 6 month of age.

Recommendations:

In the light of the finding of the present study the researchers recommend as under:-

1. After the delivery, newborn should be put on breast within one hour. Clostrum should not be discarded and must be given as "ghutti".
"Clostrum" is important for babies and it protect them from infection.
2. Mother should be given sufficient education about the advantages of Breast feeding and clostrum.
3. Exclusive Breast Feeding (1,4) should be promoted from birth to 4 month. No water, animal milk or infant formula or other liquid to be given to an exclusively breast feeding infant. Before this age milk is sufficient to supply necessary nutrients.
4. Mother should be made aware through health education programmes conducted by the health professional about the advantages of breast feeding (4, 6) which include:-

Breast milk (B.M) is perfect food for infants, breast milk is cheap, B.M Protect against infections and allergies, it protect mother from Breast Cancer, B.M. is always clean and sterile, B. M. is available 24 hours of a day, Biochemical composition is ideal for growing baby.

5. Weaning: Correct age of weaning is after infant has completed 4 month of life. After 6 month of life if complementary food is not started the infant gradually become malnourished.

A weaning diet should therefore, contain breast milk and share from all 4 foods group these are:-

Food Group	Food	Functions	Key Nutrients
Staple	Chapatti, Rice	Energy, growth	Protein, calories, Iron
Legumes	Pulses, Soyabean	Bulk of diet	Vitamins, proteins
Animal Proteins	Egg, Fish, Meat	Growth protection	Protein, calories
Vegetables	Leafy	Bulk of diet, growth protection	Vitamins
Energy	Fat, Oils, Sugar	Energy	Calories

Source: G.O.P National Nutritional Survey Report 1985-86

By using mixtures of foods, the diet of an infant can be made more balanced.

Baby Friendly Hospital Initiative. Considering these problems, a programme by the name of "Baby Friendly Hospital Initiative" was launched by UNICEF and Government of Pakistan in 1992. The major objectives of these programme are to improve optimum breast feeding practice of mother in Hospital and other Health Facilities. This should be implemented in all rural and urban areas of Pakistan in real sense.

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