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EDITORIAL

UNDERGRADUATE MEDICAL RESEARCH- A LEAP FORWARD

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"Research consists of seeing what everyone else has seen, but thinking what no one else has thought."
Albert Szent-Gyorgyi[1]

Medicine is a field with high academic demands and educational standards. In this demanding field, medical research has a central role for developing a level of knowledge that would aid in better understanding of biomedical phenomena and thus providing better treatment options.[2]

Presently, medical colleges are experiencing challenges in providing the requisite educational experiences due to lack of research and innovation particularly in South Asian region. The newly discovered facts have started to defy existing medical education making the curriculum less relevant in addressing the needs of society thus making medical research an un-negotiable necessity that every medical student needs to pursue.[3] Medical research is a dynamic process that requires an honest yet vibrant expression of thoughts with the scaffold of accuracy.[4] Research often comes with the constraints of competing pressures and thus compromising one or more of its components. These hurdles are even more obvious in undergraduate research where inadequate lucidity create lapses in the accuracy of facts mentioned in the research paper.[5]

Medical research is pivotal for medical students wanting to keep pace with ever excelling world of science. They need to be well-informed of the emerging trends and innovations in the world of medical science. Medical colleges have to inculcate the great quest for knowledge in form of medical research among the students which is prerequisite to attain the highest academic standards.[6] Research and scientific writing by medical students are being increasingly acknowledged all over the world. Medical journals with their vision of knowledge and action, encourages all forms of research and creative work from medical students. They provide a platform for young and budding researchers from around the world and beyond who are just beginning their careers in the medical and scientific fields.[7]

Keeping in view the need to boost undergraduate medical research, Ayub Medical College, Abbottabad has launched Student Journal of Ayub Medical College SJAMC. This journal aims at providing medical students with a platform to express themselves, publish their research, create awareness regarding different medical issues and, in general, create a forum of, for and by medical students to interact and grow. We believe that enhancing exposure to academic research through the development of analytic appraisal skills in the peer review process will enrich the conventional medical curriculum. The goal of this journal is to publish research work from aspiring students who want to improve their writing and critical thinking skills, and to gain experience in the field of academic medicine and publishing. Furthermore, we are dedicated to promoting interest in future career research through recognizing the scientific accomplishments of medical students across the country.

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ORIGINAL ARTICLE

BLOOD TRANSFUSIONS IN GYNAECOLOGY AND OBSTETRICS WARDS OF A TERTIARY CARE HOSPITAL

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Background: Blood transfusion is an important supportive tool in the management of gynaecological and obstetrical cases. The World Health Organisation stresses on the necessity of safe blood transfusion. The aim of this study was to describe the transfusion trends in Gynae and obstetrics patients admitted to Ayub Teaching Hospital, Abbottabad, Pakistan and to identify difficulty in transfusion. **Methods:** It was a hospital based cross sectional study carried out in gynae and obstetrics unit of Ayub Teaching Hospital, during a period of one month. 80 patients were admitted and enrolled in the study. Transfusion rates, indication for transfusion, source of blood, type of blood donor and ease of availability of blood were checked. **Results:** Out of 61 subjects, 37 (60.7%) received blood transfusion mostly for anemia. In 54 (88.5%) instances of blood transfusion, it was self-arranged and in 52 (85.2%) cases, blood was donated by family and friends. Most declared the arrangement of blood a difficult job 24 (39.3%). **Conclusion:** the transfusion rate in ATH is very high and mostly blood is donated by friends and family. There is a dire need for educating people to voluntarily donate blood to decrease the difficulty in blood arrangement.

Keywords: Blood transfusion, blood donation, gynaecology and obstetrics.

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INTRODUCTION

Blood transfusion is a process whereby blood or blood products are introduced intravenously from one individual to another individual's circulation.[1] A unit of blood contains 450 ml of blood and is collected from a single donor in a blood bag. This can be divided into different components and transfused to patients. Donation from a single donor can be given to many patients. Blood transfusion can thus consist of whole blood transfusion or individual component transfusion, i.e., RBCs, platelets, plasma, and cryoprecipitate depending on the requirement.[2,3]

High income countries use blood transfusion as a supportive tool in the treatment of massive traumas, surgery and malignancies; whereas in low income countries blood transfusion is mostly done in the settings of pregnancy related complications, delivery, anaemia and trauma management.[4]

The reported transfusion rate in obstetrics varies from 0.16% to 2–6% with higher rates in women with abnormal labours and deliveries and the transfusion rate varies between 2.8%[5] and 8.6%[6] for gynaecological procedures.

Post-partum haemorrhage and severe anaemia[7] (Hb <7g/dl) usually in the second half of pregnancy is a major indication for blood transfusion encountered in gynae and obstetrics.[8] Obstetrical haemorrhage is another indication for blood transfusion.[9] These haemorrhage cause death of almost 127,000 women yearly.[10] Maternal Mortality Rate is 275/100000 (PDHS 2007) in Khyber Pakhtunkhwa[11], which is higher than the average maternal mortality rate in Pakistan, i.e., 260 deaths per 100,000 live births.[12] Pakistan ranks among the nations with the highest maternal deaths in the region due to haemorrhage.[7,13]

Transfusion is a life saving measure but irrational use of blood transfusion can cause side effects like rashes, shortness of breath, hypotension, haemolytic, non-haemolytic[7] and febrile transfusion reactions, blood borne infection's transmission and hypersensitivity reactions.[14] The results range from no or little morbidity to even death.[15,16]

There has been a general increase in the trend of blood donation.[17] Approximately 107 million blood donations are collected throughout the world yearly. Of these, half are collected from the high income countries homing 15% population of the world. Most developed countries have 100% voluntary non remunerated blood donations[18], however the practice of family/ replacement and paid donation still persists widely especially in the developing countries like Pakistan.[19] The yearly demand of blood transfusion in Pakistan is around 1.5 million bags of which 90% is provided by family and friends.[20]

The WHO's (World Health Organisation) strategy for Safe Blood Transfusion stresses on the promotion of voluntary blood donation[18], haemovigilance and national coordination of blood transfusion services. These strategies are effective

only if backed by research.[19] The purpose of this research was to assess the magnitude of blood transfusion and the ease of availability of blood and blood products to women admitted in the Gynae and Maternity wards of ATH.

MATERIAL AND METHODS

This cross-sectional enrolled 80 patients admitted in Gynae and maternity wards of Ayub Teaching Hospital during the months of June and July 2013. Data was collected by the trained medical students using a structured questionnaire after obtaining informed consent. The study protocols and questionnaire were assessed and approved by the hospital ethical committee. Moreover, the information gathered was confirmed by tallying it with the patient's documents, laboratory reports and hospital blood bank records. Data was entered and analysed through SPSS-16.

RESULTS

Out of 80 patients admitted in Gynae wards during the study period, 61 (76.3%) patients received blood transfusion.

Out of these 61 patients who were transfused blood, 41 (67.2%) cases were admitted for obstetrical reasons; the rest 20 (32.7%) cases were admitted for gynaecological problems. Majority, 35 (57.4%) cases, who received blood transfusion were between 21-30 years and 43 (70.5%) of the cases were multiparous.

The rationale for blood transfusion as per the physician prescription was for having low Hb (less than 10.5 mg/dl) in 37/61 (60.7%) cases and in 23/61 (37.7%) cases for surgical intervention, i.e., caesarean-section. Among blood groups, B+ and O+ were transfused in 22/61 (36.1%) and 18/61 (29.5%) patients respectively. Table-1 shows the frequency of various blood groups among study subjects. Whole blood was transfused in 60/61 (98.4%) patients, and majority 50/61 (82%) were prescribed 1–2 units of whole blood for transfusion. Blood was donated by friends and family members in 52/61 (85.2%) of cases, and voluntary non-remunerated donation was observed in 9/61 (14.8%) patients.

Arrangement of blood was done by patients alone without hospital exchange in 88.5% of the times and blood was hospital exchanged in 9.8% cases. No blood units were purchased in any instance. However platelet concentrates were purchased from a private laboratory in one case 1/61 (1.6%).

Regarding difficulty in arranging the blood, 24/61 (39.3%) patients considered it difficult, while the process was extremely difficult for 10/61 (16.4%) patients. The arrangement of blood was easy for 19/61 (31.1%) patients, and 8/61 (13.1%) patients perceived the process of arrangement as of moderate level.

Table-1: Frequency of blood groups

Blood Groups	Frequency	Percentage
A+	12	19.7
B+	22	36.1
AB+	8	13.1
O+	18	29.5
O-	1	1.63
Total blood units	61	100.0

DISCUSSION

Blood transfusion rate comes out to be 76.3% in our study, in 67.2% of cases blood was transfused in obstetrical settings. This is very high transfusion rate as compared to another study conducted in Karachi, Pakistan where the transfusion rate was 9.5% and 5.5% (pre-operative and post operative respectively) in obstetric setting.[21] Another related study done in South-east Nigeria came up with transfusion rate of 7.04% in the settings of obstetrics[22] this is higher than the transfusion rate in developed countries (transfusion rate: 0.16–2.6%) but still low than our transfusion rate. The reason for this could be due to a difference in time period of study, one year study in Nigeria and Agha Khan as compared to our one month study.[9]

Blood transfusion was done mostly in the cases of anaemia (60.7%) before delivery and in surgical intervention i.e. caesarean section (37.7%) in our study. A study from Africa[22] shows the transfusion trend of 1–2 units of blood in 89% of cases, the study has elaborated the anaemia by dividing it into prepartum and postpartum anaemia. Our study did not make this differentiation. Therefore it is hard to suggest the cause for anaemia and whether the current practices are in accordance to the latest guidelines. However we suggest establishment of a hospital blood transfusion committee that will establish clear guidelines for blood transfusion.[23] Another study has explained the reason for transfusion in more details even dividing the caesarean section into primary and repetitive caesarean. The transfusion rate in caesarean delivery in our study is higher as compared to other studies conducted where the risk was very low[21,22] and transfusion for anaemia correction was only 12%[24] in setting of obstetrics as opposed to our results. There is a dire need to audit the blood transfusion done in the hospital and the results have to be communicated to the head of the departments to ensure that the

patients are being transfused only if necessary.[25]

Patients in our study were transfused whole blood in all cases whether it was transfusion due to anaemia or surgical intervention. Now the conventional whole blood transfusion is replaced by red cell component transfusion in developed countries, but the practice still persists in a developing country like Pakistan.[26,27] Even with the availability of component therapy in tertiary care hospitals in Pakistan, the practitioners still adhere to the conventional whole blood transfusion practices. Individuals specialised in component transfusion should be involved in transfusion practices as per the new guideline on the administration of blood components.[25]

Studies conducted by Mourant AE showed that B blood group has the highest frequency in Asian countries. Our study augments these historic findings of the study conducted in 1958. Results show B^+ blood group as the most common and most required blood group in our study.[28,29]

The patients getting blood transfusion are in age group of 20–30 years and multiparous women this observation is also seen in other studies from Africa and Agha Khan hospital Karachi.[22] Patients were most frequently transfused with 1 to 2 units of blood, the frequency of 3 or more blood bag transfusion is low. This trend is also seen in other researches taken in the setting of obstetrics in the late 90's.[30]

In our setting, the blood was donated mostly by friends and family of the patient no paid donor and a few voluntary donations were seen. This observation corresponds to the situation in our country where most of the blood donation requirement is met by the family and friends[31], whereas the developed countries enjoy wide resource of voluntary non remunerated donations.[19]

Arrangement of blood was done by the patient and his family directly or through hospital exchange, there is no study to compare this trend of self arranged and hospital exchange trends in blood transfusion. A subjective response by patients to grade the ease of availability of blood resulted in 55.7% patients grading the process as very difficult and difficult. There is no study to compare the responses. Increasing the availability of blood decreases the maternal mortality associated with obstetrical procedure.[31,32]

Blood donation and transfusion is a very important part of obstetrics and gynaecology. It affects the maternal health. This process has to be made better for safe and healthy mother and child.

CONCLUSION

The transfusion rate in ATH is very high. Anaemia and caesarean sections are the major contributor to transfusion requirement in Gynae/Obstetrics setting. Although blood was mostly donated by friends and family, but a reasonable proportion of the patients faced difficulties in arranging the blood. There is a dire need for educating people to voluntarily donate blood to decrease the difficulty in blood arrangement.

RECOMMENDATIONS

A larger and thorough study is required to assess the blood transfusion situation and more accurately in Public Sector hospitals of the country. Large scale studies in this area are required to help the planners and hospital managers to make evidence based decisions for ensuring a standardized, safe and easy blood transfusion services.

There is a dire need to address the current high transfusion rate and the reason behind it. Unnecessary blood transfusions have to be curbed. A set of clear guidelines based on international standards and local restrains must be developed that ensures maximum patients benefit. Regular audits on blood transfusion need to be carried out. All physicians prescribing blood should receive training in transfusion medicine. Regular workshops should be held for the practising doctors to apprise them of changing transfusion practices. A feasible way to achieve this in a tertiary care hospital is by the establishment of a hospital blood transfusion committee that will take charge of transfusion practices ensuring maximum patient satisfaction.

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ORIGINAL ARTICLE

DETERMINANTS OF LOW BIRTH WEIGHT AMONG NEWBORNS AT AYUB TEACHING HOSPITAL, ABBOTTABAD

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Background: Low birth weight (LBW) is an important predictor of health outcome of neonate in early and later life. Worldwide prevalence estimate of low birth weight is 15.5% and 95% contribution is from developing part of sphere. It is a significant health problem in Pakistan and increments the burden on ailing health services. This study was aimed to elucidate some of the important determinants so that effective intervention plan can be developed in light of these findings. **Methods:** The study was descriptive Cross-sectional study conducted in obstetric wards and labour room of Ayub Teaching Hospital. Sample size was 370 and non-probability convenient sampling was employed using researcher-made questionnaire. Data was analysed by computer software SPSS version 16.0. **Results:** Low birth weight frequency was found to be 30.3%. Mean birth weight was 2792.16±518.71 gms. About 78 out of 112, (70%) of LBW births were infants of anaemic mother and 62 (56%) of LBW babies were delivered by mothers residing in rural areas. Similarly 53% LBW births were among mothers with low socio economic status. Around 89 out of 112 LBW births were given birth by mothers performing more physically demanding work. **Conclusion:** Important positive association highlighted by this study are of maternal anaemia, working habits during pregnancy, residential background and maternal socioeconomic status with low birth weight outcome.

Keywords: Low birth weight, Incidence, Antenatal care, Rural and urban area, Socio-economic factors

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INTRODUCTION

Low birth weight (LBW) is birth weight below 2500 grams irrespective of gestational age of newborn.[1] Birth weight is an important determinant of survival and healthy growth in neonates. Low birth weight babies are categorized into two main groups, that is, those who are born prematurely and those with foetal growth restriction.[2]

World Health Organization (WHO) estimates that low birth weight prevalence worldwide is 15.5%. Low birth weight births are more common in geographic entities termed as 'developing countries' and they account for 95 per cent of all low birth weight births. Continent wise Asia has biggest chunk in prevalence and within Asia, Sub-continent has the highest prevalence with estimated, 11 million low weight births.[2] In Pakistan, recent estimates are not encouraging and some put its prevalence as high as 25%.[3] In Khyber Pakhtunkhwa, 34% infants are reported to have less than average weight at birth. Maternal malnutrition and infections during pregnancy are most important risk factors for giving birth to low birth weight babies. Multiple pregnancy and negligent attitude towards antenatal care also contributes to increased LBW incidence.[3]

Low birth weight babies account for half of the perinatal and one-third of all infant deaths.[4] It is also associated with significant morbidities like cerebral palsy, respiratory distress syndrome and is described to have positive statistical correlation with psychosocial problems in school going children as well.[5] In developing world the situation is very unfortunate, as it increases the disease load in community and incur significant financial costs to already meagre resources. Effective interventions like maternal fortification with supplementation of Iron and folic acid during pregnancy and prevention of infection have been suggested by various studies to decrease the low birth weight births and mortality and morbidity associated with it.[6] Indirect interventions like family planning, improving hygienic conditions including sanitation and avoiding addictive habits like smoking can also play important role in decreasing LBW incidence.

The objectives of this study were to determine the frequency and determinants of low birth weight births in a tertiary care hospital (Ayub Teaching Hospital). Low birth weight incidence is significantly high in this region. Research studies in this locality and for this specific issue is scarce, so importance of such studies cannot be over stated. This is an attempt to help in the establishment of preventive measures and check the efficacy of measures already employed by healthcare setup.

MATERIAL AND METHODS

This was a descriptive cross-sectional study conducted in Obstetric wards and labour room of Ayub Teaching Hospital, Abbottabad from 16.06.2014 to 16.07.2014
370 women and their new-borns delivered at Ayub

Teaching Hospital were selected using non probability convenient sampling

A structured questionnaire was developed including all the independent and dependent variables of interest. The questionnaire was pre-tested twice before adopting a final version. Data was collected on the questionnaire. Informed consent was taken from all the subjects. The completed questionnaires were entered into the computer using SPSS version 16.0. Data was described in terms of frequencies and percentages for categorical variables. Continuous variables were described in terms of Mean±SD.

RESULTS

Among the total population of 370 respondents, mean gestational age was 37.7±2.83 months (Range 14-43). Mother's mean age was 28±5.5 years (Range 15–48). Mean monthly income was Rupees 13753±9365. Mean body mass index (BMI) was 25.86±11.27. Mean haemoglobin concentration in blood of mothers before delivery was 10.27±1.73 g/dl (Range 4.90 to 16g/dl).

Average birth weight of new born was 2792.16±518.71 grams (Range 1000 grams to 5700 grams). Most of the study participants belonged to rural area and constituted 55.1% (204) of study population, 30.3% (112) were from urban and 14.6% (54) were from semi urban area

Around 1.6% (6) of participants had low BMI which shows that this proportion was underweight, 53.2% (167) had normal BMI while 45.1% were overweight with high BMI. 69.2% (256) mothers were found to be anaemic before birth while the rest 30.8% (114) had normal haemoglobin concentration.

In the study population, 30.27% (112) births were of low birth weight and most of the rest, that is, 254 (68.65%) were of normal birth weight. Meagre 4 (1.08%) births were of high birth weight.

Two variables were compared that is 'birth weight group' and 'amount of work done during pregnancy' to determine if there is some association of any sorts. Out of total 112 low birth weight births, 79.4% (89/112) births were in the group which performed basic daily activities as well as household work but same held true for normal birth weight births group, as 83% (211/254) of total normal birth weight births belongs to mothers who perform both activities. Out of total 10 births in the mothers who performed basic daily activities, household as well as field work, 4 were low birth weight births. In basic daily activities group, 34% births were of LBW and remaining 66% (35) were of normal birth weight.

DISCUSSION

The results obtained by analysis, as evident by previous section, were in tabulated and figurative form. Different variables like maternal age, education, height, weight, body mass index, haemoglobin level before delivery, amount of work done during present pregnancy, mode of delivery, household monthly income, residential background and socioeconomic

Table-1: Different variables underconsideration during research

	Number	Minimum	Maximum	Mean	SD
Gestational age (in weeks)	370	14.00	43.00	37.69	2.83
Age of mother (in years)	370	15.00	48.00	28.01	5.50
Household monthly income (PKR)	370	1100.00	120000.00	13753.51	9364.93
Number of antenatal visits done during present pregnancy	370	0	20	4.55	2.92
Number of hours of sleep per day	370	2.00	18.00	8.24	2.34
BMI	370	16.00	39.04	25.86	11.27
Hb value immediately before delivery (in gm/dl)	370	4.90	16.00	10.27	1.73
Birth weight of new-born (in gms)	370	1000.00	5700.00	2792.16	518.70

Table-1: Comparison of different birth weight groups with amount of work done during pregnancy.

	Amount of physical work done during pregnancy				
Birth weight group	Basic daily activities only	Basic daily activities + field work	Basic daily activities + household work	Basic daily activities + household work + field work	Total
Low birth weight	18	1	89	4	112
Normal birth weight	35	2	211	6	254
High birth weight	0	0	4	0	4
Total	53	3	304	10	370

Table-3: Comparison of birth weight group with adequacy of haemoglobin level in mothers

		Hb group		Total
		Anaemic	Non anaemic (Normal)	
Birth weight group	Low birth weight	78	34	112
	Normal birth weight	176	78	254
	High birth weight	2	2	4

status were explored in this study to determine any potential relation.

In our sample size of 370, mean birth weight was found to be 2792.16±518.70 grams which is consistent with other studies conducted in Pakistan. In a study conducted in Karachi, mean birth weight was found to be 2900 ±500 grams in a sample population of 832.[7]

Frequency of LBW babies in our study is 30.3% which is on the higher side compared to other studies conducted in Pakistan, which estimate it to be around 16–19%.[8] This high frequency rate can be explained, as this study was carried out in a tertiary care hospital setup which cover only a small percentage of the total births and majority of the births take place at home. Usually, complicated pregnancies and people from predominantly lower socio-economic strata come for treatment in this setup where medical treatment is of low cost, that's why, these findings cannot be generalized to population at large.

One interesting finding of our study is that LBW birth frequency is higher among mothers having normal and higher BMI, and lower in mothers having low BMI. Some studies suggest that maternal BMI has no significant effect on birth outcome in developing countries.[9] While others relate high maternal BMI with macrosomic babies and low BMI with LBW births in developed part of planet.[10] Difference in findings can be attributed to the fact that developed communities have lower rates of infections and malnutrition and better access to health services and social welfare programmes which can increase prevalence of high maternal BMI that could lead to increased neonatal birth weight outcome.

Anaemia is strongly related with LBW births in this study. According to the results, 69.6% of LBW babies were delivered by anaemic mothers. This is consistent with ample research done on the subject of maternal haemoglobin concentration and birth weight. In fact, association is so strong that research is being directed to find if there is "causal relationship" or not.[11]

The study also found that LBW births are more common among mothers residing in rural areas. About 56% of all LBW babies were delivered by mothers of that group. This is in line with various studies conducted in South Asia particularly India, where low birth weight prevalence in rural area was found to be high compared to that of highly privileged urban areas.[12] Association is similar to one that is between developed and developing world.

Similarly around 53% of LBW births occurred in mothers belonging to low socioeconomic strata. Various studies back this finding; women of low socioeconomic status inherently are at an increased risk for giving birth to low birth weight babies, irrespective of how socioeconomic status is defined, that is, by income, occupation or education.[13]

In this study, strenuous activity during present pregnancy is also strongly associated with LBW outcome. Around 80% of LBW babies were born to mothers performing household work in addition to basic daily activities. This is in accordance with previous literature which also attributes increased risk of LBW births in women performing strenuous activities. Jobs in which long standing is required are more at risk than relatively sedentary jobs. The association of physical activity with birth weight is more established in 1st Trimester.[14]

CONCLUSION

Low birth weight is still a leading health problem for neonates particularly in developing world. Therefore it is important to identify common factors associated with low birth weight prevalence. This study suggests some direct associations like that of decreased haemoglobin concentration and strenuous activity during pregnancy as well as indirect association of mother of low socioeconomic status and rural residential background with low birth weight births. Low birth weight frequency according to this study was 30.3%. No demonstrable association was found between maternal BMI with low birth weight outcome.

RECOMMENDATIONS

This study identifies some of the areas amenable to improvements. Iron supplementation, improved antenatal care, counselling regarding diet and food fortification are some of the measures which can be taken on priority basis for reduction in LBW prevalence. Mothers should be advised to avoid demanding activity, especially during first trimester and should rest as much as possible.

Furthermore, more studies on other socio demographic variables like parity of mother, unplanned pregnancy, birth interval, maternal infections and gender of child should be carried out to increase the understanding regarding the subject.

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ORIGINAL ARTICLE

PREVALENCE OF SMOKING AMONG STUDENTS OF AYUB MEDICAL COLLEGE, ABBOTTABAD

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Background: Smoking is almost a fatal habit because of its association with cancers which have high mortality. Concerning a medical student smoking is socially not acceptable for him. Our study was carried out to know the prevalence of smoking among students of Ayub Medical College, Abbottabad. **Methods** This cross-sectional study was conducted in Ayub Medical College in the 2nd week of June 2014. Students of Ayub Medical College were included in the study. Relevant data was collected through questionnaire and analysed using SPSS-16. **Results**: The study showed that out of total 441 students, 117 were smokers and most of them were aged between 22–26 years. Out of 117 smokers, 107 (91.4%) were male students while 10 (8.6%) were females. These students have been smoking for last 1–2 years. The main reasons for smoking were tension of studies (7.5%) and enjoyment (7.1%). **Conclusion**: The prevalence of smoking was more among male and students residing in hostels were more affected by this habit. Mental stress and peer pressure shows a positive influence on heavy smoking. Majority of the smoker students belong to urban areas and they were willing to quit smoking.

Keywords: Smoking, Cigarette, Prevalence, Fatal habit

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INTRODUCTION

Smoking refers to the practice in which a substance, mostly tobacco, is burned and the smoke is tasted or inhaled. The most common method of smoking today is through cigarettes, primarily industrially manufactured but also hand-rolled from loose tobacco and rolling paper.[1] A smoker is defined as someone who continued to smoke any amount of tobacco either regularly or occasionally, a non-smoker is one who had never smoked and an ex-smoker is one who had smoked either occasionally or regularly in the past but had now quit completely.[2]

Data from recent studies have confirmed the quantitative relationship between smoking and many diseases such as coronary artery disease, lung cancer, bladder cancer, pulmonary emphysema, peripheral vascular disease and neonatal mortality.[3] In 2000, an estimated 4.83 million premature deaths were attributable to smoking, of which almost 50% were in developing countries.[4] Most high-income countries are showing a continuous and steady decline in the prevalence of smoking.[5] In contrast, tobacco use in developing countries such as Pakistan continues to rise each year. Globally during the past 2 decades cigarette production has increased at an average of 2.2% each year, outpacing the population growth rate of 1.7%.[5] Out of a total population of 78 million in Pakistan in 1995, 36% males and 9% females aged 15 years or older were found to be smokers.[6]

Nowadays, one-third of adults (1.3 billion people) are known to be smokers. While 25% of females smoke, the level rises up to 50% among males.[7] Approximately 6 trillion cigarettes per year are smoked worldwide, and the age at which people take up smoking is decreasing all over the world. Approximately 5 million people die from smoking related disorders each year, and one-tenth of all adult deaths are related to tobacco use.[8] In developed countries, one-third of all cancer deaths (47% of male and 14% of female cancer deaths) are associated with cigarette smoking.[1] It is estimated that deaths attributable to tobacco use will rise to 10 million by 2025, and one-third of all adult deaths are expected to be related to cigarette smoking. 30% of all cancer deaths, 75% of all COPD deaths and 25% of all atherosclerotic heart diseases are attributed to smoking.[9]

Rottman first claimed that lung cancer might stem from tobacco use in 1898.[10] Decades later this hypothesis was proved by Roffo, who produced skin cancer in mice, using cigarette tar, in 1931.[11] The epidemiological relation between cigarette smoke and lung cancer was first reported by Muller in 1939.[12,13] Consequently, the main cause of lung cancer in males was reported to be cigarette smoking in the Surgeon General's Report in 1964.[10] More than 90% of patients with lung disease die of cancer, 17.8% are attributed to pulmonary carcinoma and 5-year survival rates are less than 10%.[14]

There are a lot of reports that identify cardiovascular system as one of the major target organs for ill effects of smoking.[15] Adverse effects on

the heart and vessels are mediated by many chemical compounds that are usually concentrated and condensed into tobacco mixtures.[16]

Data on the smoking habits of medical students is of particular interest. As doctors, they will be responsible for providing health care to the population and can influence the future health policies of their country. The present study aimed to establish the prevalence of smoking and knowledge and attitude towards smoking among the students of Ayub Medical College Abbottabad.

MATERIAL AND METHODS

This study was descriptive cross-sectional study. This study was conducted in Ayub medical college in the 2nd week of June 2014. Students from 1st year MBBS/BDS to Final Year MBBS/BDS of Ayub Medical College, Abbottabad were included in the study. Four hundred and forty-one students were subjected to the study. Forty-nine students were selected from each year randomly. Relevant data from subjects was collected through questionnaire including bio data and smoking history. Compilation and analysis of the data was done on SPSS 16. Results obtained through SPSS analysis were compared with similar studies in the literature and conclusion was drawn.

RESULTS

Out of 441 students, 229 (51.9%) were male and 212 (48.1%) were female. Study revealed that out of total 441 students, 117 were smokers and most of them were aged between 22–26 years. It also shows that most of them belong to effluent families. These students have been smoking for last 1–2 years. Out of total 117 smokers, 107 (91.4%) were male students while only 10 (8.6%) were female students. The prevalence of smokers in male students is much higher.

According to the above results most of the students (89%) were living in hostels. The main reasons for smoking were stress of studies (86%) and enjoyment (8.8%). Other reasons were peer pressure and addiction to smoking. 67 (57%) out of 117 smokers wanted to quit smoking while 50 (43%) students did not want to quit. One hundred & fifty two (34.4%) students told that someone of their family members also smokes while family members of 144 (32.6) students are non-smokers. Rest 145 (33%) students did not reply to the question of family history of smoking. 399 (90.4%) students thought that smoking was injurious to health while 27 (6.1%) thought it did not pose any health related risk. Fifteen (3.5) of the total students responded that they were not sure about the hazards of smoking.

DISCUSSION

It is a well-known fact that cigarette smoking is injurious to health as tobacco has numerous unwanted effects on human health. It is hard to contemplate why they start smoking when they know it is bad for them and people around them. This is a big and serious issue of our youth.

Our study revealed that most of the students start smoking cigarette during college years. Most of the students start smoking in hostels as they are not supervised by their parents and they can smoke without any fear. Students whose family members are smokers have precedence to start smoking.

Some people are chain smokers but our study shows that students prefer less than five cigarettes a day. The family members of most of the students do not know the habit of their smoking. Some students are also addicted to other stuff like snuff in addition to smoking.

Mental stress, loneliness and peer pressure were related to smoking. Students believe that smoking is a remedy for their mental stress and loneliness. Some students start smoking just for style and fashion.

Media play a major role because advertisement and smoking scenes in movies and dramas which attract youth to start smoking. Most of the students want to quit smoking and believe that smoking is a socially unacceptable and detrimental health consequence and they think that smoking cessation programs will be helpful.

CONCLUSION

Smoking is the leading cause of morbidity and mortality in different age groups especially in the younger age group. Smoking proves fatal if not abandoned in time. Factors influencing smoking should be dealt with and student support programs should be initiated for students who want to quit smoking

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ORIGINAL ARTICLE

ASSESSMENT OF HOSPITAL WASTE MANAGEMENT IN AYUB TEACHING HOSPITAL, ABBOTTABAD

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Background: Hospital waste is the type of waste which has great potential of creating variety of health problems including infections and injuries. Health care waste management is a vital part of hygiene and infection control within a hospital and an appropriate management of waste proves effective in controlling nosocomial hospital acquired infections. This study was carried out to assess the hospital waste management practices at Ayub Teaching Hospital (ATH). **Methods:** This descriptive cross sectional study was carried out from April to October 2013 at different units of Ayub Teaching Hospital, being selected by convenient sampling technique. Data was collected by means of a questionnaire which was then computed into statistical information (tables), using SPSS software and results were interpreted. **Results:** Majority of the respondents were nurses with no training on health care waste management. There was no segregation at point of source or at transportation. 68% of waste handlers were not using any kind of protective clothing. Even being provided with safety boxes, 50% of the units were not using it. As regards to healthcare waste management practices, there was absolute gap between theory and practice. **Conclusion:** Healthcare waste management is a community problem. Lack of knowledge, training and strict supervision by administration is significantly associated with ill management of waste. Our findings pointed to upgrading nurses' knowledge and practice in relation to management of health care waste after implementation of the program.

Keywords: Waste management, waste segregation, hospital waste

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INTRODUCTION

Waste produced in various human activities has become unsettling in recent years, particularly those produced in health care institutes. Waste management is the generation, prevention, characterization, segregation, monitoring, treatment, handling, reuse and residual disposal of wastes. Health care waste is the waste produced from all human or animal health care actions, together with home care and field work. It has been classified into five groups: a) infectious, b) chemical, c) radioactive, d) common and E-piercing and cutting.[1–3]

Hospital waste is the type of waste with high potential of creating variety of health problems including infections and injuries.[4,5] Hospital wastes include risk waste and non-risk waste.[6] Health care waste management is a vital part of hygiene and infection control within a hospital and an appropriate management of waste proves effective in controlling nosocomial hospital acquired infections. All individuals exposed to improperly manage health care waste are at risk of being injured or infected. The most vulnerable groups include doctors, nurses, sanitary staff and hospital upholding workforce. Patients under treatment in the health care facilities, their visitors and the general public are also at risk of being injured or infected through health care waste.[7]

Despite the high level of waste generation from the hospital sources and their health implication, emphasis on waste generation and its management has not gained importance which it deserves.[8] Hospital waste management is the use of techniques for the appropriate disposal of hospital waste.[9] In developing countries, awareness regarding hospital waste management in terms of segregation, collection, storage, transportation is lacking.[6,10] Many hospitals plainly dump all their wastes collectively from reception area trash to operating room waste without any segregation whereas in most cases, some hospitals use incinerators but these medical waste treatment technologies have not been cost-effective enough to deliver the wastes safer, cleaner and harmless in the environment.[11] Mishandling of waste is expected to have serious public health consequences and lethal effects on the environment.[5,10] One fourth of the waste produced by health care services is considered dangerous, with potential risks for the health care providers and the community.[12] Meeting the standards to generate, use, store, treat and disposal of waste can be difficult and expensive. Even if the guidelines are far-reaching and are intricate to apply, the complete and documented accord with the applicable regulations is obligatory to assure personnel and environmental safety. Individual health care institutes should make their own policies and procedures for waste handling in accordance to their requirements.[10] This study was carried out to assess the management of waste produced at Ayub Teaching Hospital Abbottabad.

MATERIAL AND METHODS

This cross sectional descriptive study carried out from April to October 2013. The Ethical Review Board of Ayub medical college Abbottabad, Pakistan approved the study. The respondents in wards and sanitary staff were selected by convenient sampling from all the wards of Ayub Teaching Hospital. The study was conducted at Ayub Teaching Hospital, which is a 1000 bed tertiary care hospital with wide spectrum of health care services. Questionnaire was developed on scientific literature and having both closed and open ended questions. It was used to collect information from administration and from the responsible staff of the units; i.e., nurses and senior registrars.

For observation of practice, the observation checklist was developed for wards and incineration department. This was designed to evaluate the availability of equipment, its use and the practice of doctors and nurses towards safety precautions.

Statistical analysis was performed using the Statistical Package for Social Science (SPSS) version 16. Continuous data were displayed as the mean±standard deviation (SD), while the categorical and nominal data will be presented as frequencies and percentages.

RESULTS

Out of the total 35 wards, in 20 wards persons responsible for disposal of ward waste were staff nurses (57.1%), in 6 wards, the responsible person were registrars (17.1%) and in 9 wards, other persons (25.74%) were responsible. Twenty (57.1%) of the respondents said that they keep a record of waste generated in their ward while 15 respondents (42.9%) kept no record of the waste generated. Only one person (2.9%) in 35 had received training on management of hospital waste in last one year. 54.3% respondents said that there is a monitoring system on sanitary staff regarding waste disposal while 45.7% said that there is no monitoring system. A total of 51.4% received feedback from the administration and 48.6% received no feedback.

In 24 (68.6%) wards no identification points were used for the segregation of harmful waste from non-harmful waste. 11 (31.4%) were separating harmful and non-harmful waste by using identification points. In 30 (85.7%) wards there were no color coded containers for risk and non-risk waste and only in 5 (14.3%) wards there was use of different colored bags for hazardous and non-hazardous waste. 60% wards showed there were no separate trolleys for transport of risk and non-risk waste. Only 14 (40%) wards were transporting risk and non-risk waste separately in trolleys. In 30 (85.7%) wards these trolleys were not properly covered and only 5 (14.3%) wards were covering the trolleys. In 65.7% wards, there was no protective clothing available for the sanitary staff and only 34.3% wards were providing the protective clothes to the sanitary staff while handling the hospital waste. A total of 17 out of 35 (48.6%) wards were using safety boxes for disposal of needles and syringes while in 18 (51.4%) wards there was no use of these safety boxes. (Table-1)

A significant number of participants 15 (42.9%) suggested that rules and regulations should be applied, 7 (20%) participants each suggested that seminars should be arranged to teach the staff and that administration should be strict upon workers to improve the waste management. Six (17.1%) participants gave suggestions other than mentioned above.

Table-1: Questionnaire of hospital survey (n=35)

	Yes (f/%)	No (f/%)
Record keeping of waste generation	20 (57.196)	15 (42.9%)
Received training regarding hospital waste in last one year	1 (2.9%)	34 (97.1%)
Monitoring system on sanitary staff	19 (54.3%)	16 (45.7%)
Received feedback from administration regarding hospital waste	18 (51.4%)	17 (45.7%)
Identification points for segregation of waste	11 (31.4%)	24 (68.6%)
Presence of different color coded containers	5 (14.3%)	30 (85.7%)
Risk and Non-Risk waste dumped in separate containers	14 (40%)	21 (60%)
Usage of Protective Clothing by staff	11 (31.4%)	24 (68.6%)
Trolleys properly covered	5 (14.3%)	30 (85.7%)
Protective clothing available for sanitary staff	12 (34.3%)	23 (65.7%)
Transportation of Risk and non-risk wastes in separate trolleys	11 (31.4%)	24 (68.6%)
Availability of safety boxes for needles and syringes	25 (71.4%)	10 (28.6%)
Safety boxes for needle and syringes being used	17 (48.6%)	18 (51.4%)

Figure-1: Incharge ward waste disposal

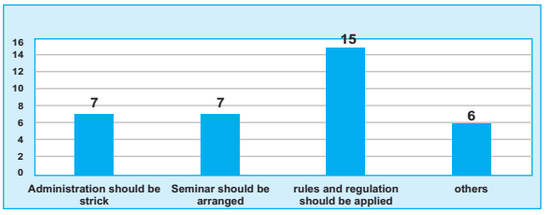

Figure-2: Response of participants

DISCUSSION

The study described the results of the key informants interviews and observations of the staff, availability of equipment, their use and practical implementation of standards at different units made during the visits to hospital with regard to the hospital waste management practices at ATH. It also highlighted the requisite and achievability of the training of the staff and strict application of rules and regulations defined by the hospital administration. Among the health workers in hospitals, nurses play a key role in the management of health care waste, as they are responsible to segregate the waste and store it in the proper bins at the point of generation. In order to professionally fulfill their responsibilities, it is important that they have ample knowledge about the importance of segregation and how to distinguish the different containers for the various types of health care waste, the hazards of hospital waste, proper techniques and methods of handling the waste, and practice of safety measures. Proper disposal practices can go a long way towards the safe disposal of hazardous hospital waste and protect them, their patients, the community and the environment.[13]

Practices depend upon compatible education and training, which in turn are complimentary. Education without training is irrational, whereas training without education is superfluous. All employees in hospital handling and managing clinical waste need to be trained in safe procedures to lower the risks to human health and to be able to deal with spillages, accidents and other emergencies.[14] The study showed that 97% of staff did not receive training in the last one year. This indicates the need to scaling up of HCWM formal training programme. The importance of detailing[15] specific information on HCWM by way of training is reiterated with this finding. Most of the surveys regarding HCWM in South East Asian Countries also have identified the lack of training as the main reason for poor HCWM.[16,17] Studies from similar resource limited situations also reveal that trainings of hospital staff with proper follow up can lead to improved HCWM practices within the health facilities.[18] Our results are consistent with other supporting studies which have also highlighted importance of knowledge and awareness of HCWM among hospital staff. Surveys from hospitals from major tertiary care hospitals in Karachi suggested that hospital staff was not aware about the HCWM practices especially with respect collection storage and disposal.[10]

Segregation of healthcare waste into risk and non-risk entities at the point of generation and its identification is the key to its minimization and effective management. The waste sorted into color coded plastic bags or containers: yellow bag for risk waste, yellow container for sharps and white bag for non-risk waste.[21,22] But a significant percentage in this study showed that there was neither segregation of waste nor use of any color coded containers for dumping risk and non-risk waste separately.

Since medical waste is designated as hazardous waste, a system is required for its management including transport.[23] Our study revealed that there were no dedicated trolleys or containers for the off-site transport of waste from different units. Sanitary staff in wards was found transporting waste in trolleys, which were not covered, to the central dump area and incinerator. Some staff was observed carrying containers and bag in their hands with no concept of taking precautionary measures to protect themselves. This finding is in compatibility to studies conducted in Faisalabad and other developing countries.[7,24]

CONCLUSION

The overall findings of this study indicated that the majority of wards did not apply the recommended healthcare waste management protocols put by WHO. Moreover, the current healthcare waste management practice in units was improperly managed and can pose a risk for human health workers and the environment.

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ORIGINAL ARTICLE

CATARACT AND ITS RISK FACTORS IN PATIENTS PRESENTING TO OUTDOOR DEPARTMENT OF AYUB TEACHING HOSPITAL, ABBOTTABAD

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Background: In Pakistan, the leading cause of blindness in adults above 30 years of age is cataract. Cataract remains the leading cause of blindness worldwide. Cataract blindness presents an enormous problem in terms of magnitude, functional disability, and loss of self-esteem, considerable economic loss and social burden. This study was carried out to find the risk factors of cataract in patients presenting in Ayub Teaching Hospital (ATH). **Methods:** The study was hospital based cross sectional study of 386 patients that presented in outpatient department of ophthalmology, Ayub Teaching Hospital, Abbottabad. All the patients were included who presented to ATH during the study period. Data was collected using structured questionnaire. **Results:** Out of total patients, majority were male (53.4%) with most of them in age groups of 50 years and above. Most prevalent was acquired cataract with trauma being the major cause. Majority (77.7%) showed up for check-up after 50 days of onset of symptoms. **Conclusions:** Older age groups should be examined thoroughly by Ophthalmologist. Population should be counselled regarding trauma prevention and timely ocular check-ups.

Keywords: Cataract, risk factory, Ayub Teaching Hospital

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INTRODUCTION

Pakistan is a developing country with the world's sixth largest population. In Pakistan, the leading cause of blindness in adults more than 30 years of age is cataract. Cataract remains the leading cause of blindness worldwide. Individuals with moderate visual impairment (<6/18 to ≥ 6/60) have, in most of the cases, either refractive error (43%) or cataract (42%) as the main cause of their visual impairment.[1] Cataract blindness presents an enormous problem in terms of magnitude, functional disability, and loss of self-esteem, considerable economic loss and social burden.[2] In order to minimize the age factor, older people should be thoroughly examined by the ophthalmologists. The only cure for cataract is surgical intervention.

This survey was conducted in the ophthalmology outpatient department of Ayub Teaching Hospital, Abbottabad. Ayub Teaching Hospital started working in the year 1995, gaining the 1000 bedded status in the year 1998.[3] It is a centre for undergraduate and Post Graduate studies in different disciplines of Medicine and Surgery.[4]

Financial constraints in a third world country like Pakistan determine the procedures being carried out. Restraints are not observed in a private setup.[5] Since Pakistan is plagued by poverty like the rest of the developing world, the population below the poverty line is left with the only treatment options at the public sector hospitals so they opt for the conventional way of cataract surgery with relatively higher risk of complications.The objective of this study was to evaluate the major risk factors associated with cataract in different patients, to minimize the chances of getting the disease among those at risk and to come up with recommendations for better treatment plans in the future.

MATERIAL AND METHODS

This research was a hospital based cross sectional study that was conducted during the months of July to December 2013.

A total of 386 cataract patients of all ages who presented to the Ophthalmology outpatient department of ATH during the time of this study comprised our target population. The sampling technique used was convenient sampling. Patients of all age groups were included in this study and were further divided into the age groups of 0–14, 15–50, and 50 and above. Informed consent was taken before examination from all patients and the guardians of minor patients. After taking a brief history from the subjects, visual acuity for literate and illiterate patients was measured using Snellen's and E-chart respectively. Examination of eyelids, globe, pupillary reflex and lens were carried out with a pen-torch, slit lamp, binocular magnification loupe, and direct ophthalmoscope at a distance of 20–30 cm. The data collected was recorded and analysed using SPSS version 16.0.

RESULTS

Sample size was 386 of which 4 people refused to participate. Of these, 207 (54.1%) were males while

175 (45.9%) were females. Our data comprised of patients of all ages who were further divided into three age groups. The majority of patients, 219 (57.3%) lied in the age group of 50 and above, followed by 87 (22.8%) patients between the ages of 15-50 and 76 (19.9%) patients in the age group of 0–14 (Table-1)

Our study showed that the most frequent type of cataract in patients was acquired cataract occurring in 299 (77.8%) patients while congenital cataract was observed in 85 (22.2%) patients. Trauma was the most prevalent cause of cataract seen in 66 (17.1%) patients followed by metabolic disorders in 39 (10.1%), congenital in 29 (7.5%), muscular disorders in 21 (5.4%), complicated cataract in 18 (4.7%), neurological disorders in 12 (3.1%), radiation in 11 (2.8%), drug-induced in 10 (2.6%), osseous diseases in 6 (1.6%), skin diseases in 4 (1%) and cataract associated with other syndromes in 5 (1.3%) patients. In 161 (41.7%) patients, cataract was found to be due to causes other than those mentioned.

Our results demonstrated that 272 (70.7%) patients showed up for a medical check-up beyond 50 days after the onset of symptoms. Forty three (11.4%) patients came within 0 to 10 days of onset of symptoms, followed by 38 (10.1%) within 31 to 50 days and 29 (7.8%) patients within 11 to 30 days. Furthermore, 42 (11%) patients presented with a positive family history for cataract whilst 340 (89%) patients had no history of cataract in their families.

Table-1: Distribution of age groups of patients.

Age group	Frequency	Percent
0-14	76	19.9
15-50	87	22.8
>50	219	57.3
Total	382	100.0

DISCUSSION

Our findings demonstrate that majority of patients having cataract were males (54.1%) and in the age group of 50 and above. Such high fraction of senile cataract may be due to an over-presentation of elderly patients in our study. The latter finding is consistent with that of a study done by Avachat *et al.*[6]

According to our study, senile cataract remains the most common type (57.3%) as suggested by other studies too[7,8,12] due to a natural aging process of the nucleus and possibly a cumulative effect of certain risk exposures throughout life.[7] Conversely, various studies[4,15] showed that certain anatomical types of cataracts were fairly more prevalent among women probably due to some hormonal control; as increased incidence of cataract was seen in multiparous women and reduced incidence noted in women after menopause[7].

Congenital cataract was seen in 22.2% patients. This is consistent with a survey done in Bradford[13] where majority of patients with ocular congenital anomalies, including cataract, were of Pakistani origin mainly due to certain genetic factors and relatively high ratio of consanguineous marriages. This finding is almost in harmony with a study done by Ilechie *et al* in which 23.14% patients presented with congenital cataract[14] probably due to poor health promotion and preventive services in an under-developed region like Ghana.

The most striking feature of the current study was that, trauma remained as the most common cause of cataract for all age groups that is 17.1%. As known from previous researches, ocular trauma was the most frequent cause of eye problems encountered by people in developing countries.[17] An interesting finding noted in a study done in a rural setting in Pakistan[16] was that farmers had the highest prevalence of blindness and the most prominent cause of blindness in that study was cataract. This correlation is possibly due to the continuous risk of exposure of farmers to traumatic objects. Another study in Lahore, Pakistan[18] showed that cataract was observed in 34% of patients after ocular trauma. Traumatic cataract was one of the main ocular manifestations in firework-related eye injuries as mentioned in a retrospective study done in China.[19] Such type of trauma is also particularly common in our setup which may be one of the reasons why trauma is the most frequent cause of acquired cataract in our study.

This study showed that metabolic disorders like diabetes mellitus, gout, galactosemia and hypertension posed a significant risk for development of cataract. No other cause of cataract could be identified in those patients. This finding supports majority of other studies[7,20,21] due to the fact that diabetes mellitus continues to be an important risk factor, after increasing age, for the development of certain anatomical types of cataract. It is hypothesized that the initiating mechanism in diabetic cataract formation is the production of polyols from glucose by Aldose Reductase resulting in increased osmotic stress in the lens fibres leading to their swelling and rupture.[22] Future researchers can work on the specific association of the separate metabolic disorders with cataract formation as the risk of development of cataract in people with certain systemic diseases[7], which will consequently help in development of specific preventive strategies against formation of metabolic cataract.

A prominent feature of this study is a

relatively higher incidence of cataract in patients suffering from muscular disorders (5.4%). The type of muscular disorder could not be identified. However, a strong linkage is noted between cataract and myotonic dystrophy type 1[23] with a positive hereditary association. Thus, the consanguineous marriages, prevalent in our society, describe such a high frequency of muscular disorders associated with cataract formation. On the contrary, osseous diseases like arthritis had shown prominent association with cataract formation in a previously published study[7]; however our study portrayed only minimal association between cataract and osseous disorders (1.6%). Follow-up studies of cataract patients with osseous problems need to be carried out in order to ascertain an exact linkage between arthritis and cataract formation, because increased incidence of arthritis had been linked to decreased risk of cataract by certain studies.[7]

Another noticeable cause of cataract identified in the current study is exposure to radiation (2.8%). The main sources of radiations are sunlight UV radiations, occupational exposure to ionizing radiations[25] and radiation accidents[26]. Previously, a study done in northern Pakistan revealed that long term exposure to UV radiation from sunlight was not strongly suggestive of its significance in cataractogenesis.[24] However, sunlight exposure had important null association with cataract; the null result for sunlight UV-B radiation could be due to the method used to calculate annual ocular sunlight exposure.[7] Nonetheless, occupational exposure to ionizing radiation and long term exposure to radiation accidents could not be identified in patients who presented with cataract in this study. Exact association of radiation with cataractogenesis still needs to be established.

Various associations can be ascertained to the development of drug-induced cataract in our study that is 2.6%. Apart from individual roles of certain drugs in cataract formation, chronic usage of some drugs for treating long-term metabolic and neurological diseases can be linked to cataractogenesis. Our study is in conformity with earlier studies which had proved a substantial role of gout medications[20], calcium channel blockers, systemic corticosteroids[7], phenothiazine and other tranquilizers[27] in development of lens opacities. Other risk factors identified in this study were cigarette smoking, low literacy rate of patients and certain nutritional aspects. Cigarette smoking has a prominent role in development of nuclear cataract which was proved in certain epidemiological studies.[20,28] But its effect is believed to be reversible to some degree as studies have shown that past smokers had moderate risk reduction after stoppage of smoking.[7]

Majority of our findings are in consistency with those of other studies done locally as well as abroad. Increasing age, male gender, trauma, metabolic diseases, muscular disorders and drug ingestion exist to be the major contributing factors in the formation of lens opacities. One of the biggest limitations of this study was our small sample size due to which equal presentation of patients with all types of risk factors could not be made possible. Furthermore, factors related to neurological, osseous and skin diseases could not be accurately determined which needs further elucidation.

CONCLUSION

Elderly should be thoroughly examined by the ophthalmologists for prompt diagnosis and treatment. Trauma related cataract is another preventable risk factor that can be addressed to some extant provided our hospitals are better equipped for emergency management of ocular trauma. Timely ocular check-ups should be encouraged and better treatment facilities should be provided to the patients like phacoemulsification and vortex method which have fewer complications and more benefits.

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REVIEW ARTICLE

CHILD HEALTH STATUS IN PAKISTAN

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Pakistan is the sixth most populous country in the world. Child health status is very poor and mortality rates for children at all ages are very high. Pakistan is making very slow progress towards better health of child and mother. Among the Asian countries, Pakistan has the slowest rate of child mortality reduction. Major factors which are playing role in death of children should be improved like education of mother, gender inequality and proper secondary as well as tertiary care. Since neonatal mortality rate (NMR) constitutes about half of under five deaths in the country, any initiative to reduce NMR would in turn help in decreasing under five mortality rate and improve child health status. We here present a brief review of child health status in Pakistan in comparison to world and discuss main interventions which need to be done to help Pakistan progress.

Keywords: Child health status, Child mortality rates, Pakistan

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INTRODUCTION

Globally under five mortality rate (U5MR) stands at 46 deaths per 1000 live births, however, it has reduced from 90 to 46 during 1990 to 2013 and has shown a decline of 49%. In absolute numbers, the deaths of children under five declined from 12.7 million to 6.5 million during the same period. Half of these deaths take place during the neonatal period, i.e., deaths within first 28 days of life and stand at 2.8 million. They have declined from 33 to 20 deaths per 1000 live births. Still 17000 children die every day. About half of under five deaths occur in only five countries: India, Nigeria, Democratic Republic of the Congo, Pakistan and China. The proportion of under five deaths during neonatal period has increased 19% since 1990. There is 60% decline in under five deaths in developed countries as compared to 48% in underdeveloped. There is 37% decline in neonatal deaths per 1000 live births. Globally annual rate of reduction of under-five is 2.86% from 1990 to 2013 with highest rate of annual reduction of 4% from 2005 to 2013.[1]

Child Health Status in Pakistan since 1990 to 2013

According to US consensus Bureau, Pakistan is sixth most populous country in the world.[2] In Pakistan Under five mortality rate stands at 86 deaths per 1000 live births with annual rate of reduction of 2.1% from 1990 to 2013. Annual rate of reduction is much slower in Pakistan as compared to other countries. Also, infant mortality rate (IMR) declined from 106 to 69 deaths per 1000 live births in Pakistan. The neonatal mortality rate declined from 56 to 42 deaths per 1000 live births in Pakistan.[1] Among the Asian countries, Pakistan has the slowest rate of child mortality reduction. Furthermore, it is noted that many countries have made steady progress in reducing U5MR, however, there is a far slower decline in first day deaths.[3] The causes for high first day death rates in South Asia are high number of preterm babies and low birth weight, low use of contraception, poor maternal health and nutrition, inadequate healthcare and pregnancy at young age. Pakistan is among top ten countries with highest rates of first day deaths and still births during labour.[4]

Causes of death in Children

Globally leading causes of under-five mortality include pneumonia (17%), preterm birth complications (15%), intra-partum related complication (10%), diarrhoea (9%) and malaria (7%). About 45% of under-five deaths are attributable to malnutrition. Globally, the main cause of child mortality is prematurity and almost 50% deaths were due to infectious diseases. The other causes of death in children include pneumonia (13%), intra-partum related complications including birth asphyxia (11%), diarrhoea (9%), neonatal sepsis (7%) and malaria (7%). Measles, HIV/AIDS & neonatal tetanus account for less than 2% of deaths.[5] Six diseases account for 70% of deaths in children less than five years i.e. pneumonia (19%), diarrhoea (18%), malaria (8%), measles (4%), HIV/AIDS (3%) and other neonatal conditions (37%).[6] In developing countries like Pakistan and India, leading causes of deaths in children are still infectious diseases as compared to developed countries where injuries are leading cause besides neonatal causes such as birth defects.[7]

In Pakistan, major causes of mortality among children less than five years are birth asphyxia (22%), sepsis (14%), pneumonia (13%), diarrhoea (11%) and prematurity (9%). Before reaching age five, one in every eleven children in Pakistan dies. More than half of these deaths occur in first month of life. Birth asphyxia, prematurity, sepsis and pneumonia are major causes of death in neonatal period. Post

neonatal deaths are due to diarrhoea, pneumonia, meningitis and sepsis.[8] The main determinants of neonatal death in Pakistan are lack of education and maternal empowerment, high fertility rate and short birth interval, poverty, gender inequality, poor referral system and poor quality of primary, secondary and tertiary healthcare.[9]

How can new-born deaths be prevented?

Health care workers can play an important role in preventing the new-borns deaths. Premature births, complications during labour and delivery and infections are the main causes of death of new-borns whereas child birth complications, maternal infections and hypertension are main causes of stillbirths. Eight essential services are identified to save children by health care workers and mid-wives. These are:

1. Timely care during delivery to prevent complications
2. Proper management of preterm babies especially use of corticosteroids for lung maturity
3. Basic new-born care e.g. breast feeding and cord care for infections, etc.
4. New-borns should be resuscitated if they are not breathing spontaneously.
5. Kangaroo mother care should be advocated.
6. New-born infections should be treated.
7. Inpatient care for sick and small new-borns
8. Prevention of TORCH infections [4]

Maternal and Child health key initiatives in Pakistan

World Health Organisation maternal, new-born and child health programme is playing pivotal role in improving the health. Health care providers have been trained in integrated management of new-born and childhood illness using developed training modules. Emergency obstetric care package has developed by WHO Pakistan. It provides guidelines to health care workers working at first-level care. WHO Pakistan along with UNFPA and UNICEF, received support through Norway-Pakistan partnership initiative for the maternal, new-born and child health programme.[10] In addition to donor supported programme, Government of Pakistan has initiated following programmes promoting and protecting maternal and child health:

- Maternal and Child Health Programme (MNCH)
- National Programme for Family Planning and Primary Health care
- National EPI Programme
- Nutrition Project
- MNT-Special Immunization Activities
- National Programme for Control of Diarrhoeal Diseases (CDD)
- Acute Respiratory Infections Control Project
- Polio Eradication
- Integrated management of childhood illnesses (IMNCI) strategy
- Women's Health Project (in 20 districts)
- Reproductive Health Project

CONCLUSION

Indicators of child health status in Pakistan are very poor and Pakistan is lagging behind in achieving Millennium Development Goal.[1] Prioritizing neonatal care can result in tangible improvement. Enhancing primary health care can bridge the gap. Increased financial allocations are required to improve maternal and child health. There is a need to focus on education of people and equality should be maintained. Appropriate research and evidence based interventions are required to improve health status. Rapid growth rate has negative impact on health status of children and mothers. There is a need for the country to plan and prioritize resources and in doing so, consider to start early intervention centres in districts that have shown higher decline in U5MR. A national level technical resource group and an advisory group is required to guide the ministry of health for planning and budgeting and detailing year wise activities for such an initiative. Better quality of health services should be provided at all levels especially in rural areas along with proper referral system for diseases undiagnosed at low level especially in these areas.

It is important to screen and manage children for birth defects but also to address reduction in their incidence through proper policy changes.[11] Since new-born mortality rate constitutes a major proportion of the U5MR, a national new-born action plan should be developed.[12] As sepsis and birth asphyxia are leading causes of deaths in infants and new-borns, it is important to observe clinical treatment protocols, infection control practices and quality of care at birth. It is important to educate mothers about child care especially in neonatal period. This could include good nutrition and exclusive breastfeeding during first six months of life. As expenditure is a limiting factor for care seeking, free of cost treatment should be given to pregnant women and children especially those from

the low income group or social insurance schemes should be initiated.fewer complications and more benefits.

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CASE REPORT

ANTERIOR MEDIASTINAL MASS

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Mediastinal masses in paediatric patients are very heterogeneous in origin and aetiology. In the first decade of life, 70% of the mediastinal masses are benign whereas malignant tumours are more frequent in the second decade of life. Among the mediastinal masses, lymph nodes are the most common involved structures and could be enlarged due to a lymphoma, leukaemia, metastatic disease, or due to infectious diseases as sarcoidosis, tuberculosis and others.

Keywords: Mediastinal masses, Lymphoma, Paediatric

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INTRODUCTION

Mediastinal masses in children can be caused by the expansion of many organs that are contained in this thoracic compartment, such as the thymus gland, the thoracic portion of the oesophagus and trachea, the great vessels, the heart, lymph nodes, fat and nerves. Non-vascular mediastinal masses can derive from all these structures and represent many conditions, such as congenital anomalies, benign and malignant neoplasms and infection.[1] Lymphomas account for 13% of all paediatric cancers and are the most common cause of a mediastinal mass in children; almost half of the children with non-Hodgkin and two thirds of the children with Hodgkin lymphoma present with anterior or middle mediastinal masses.[2]

CASE REPORT

A 12-year-old girl was admitted as an in-patient in Paediatric Ward of Agha Khan University Hospital. During the first consult in the AKUH Emergency Room, the family described a history of increasing stridor in sleep during the past week. On detail history the mother complained of changes in skin colour from past 4 years, worsening cough and hoarseness from past 4 months. The physical examination was non-contributory. The chest X-ray showed radio opaque shadow anteriorly in the mediastinum. Thoracic computed tomography (CT) with contrast described a bulky mass within anterior mediastinal compartments, extending from phrenic to phrenic and from thymus till just above diaphragm and compressing the trachea. Considering these results the provisional diagnosis of anterior mediastinal tumour was made.

She was booked for an elective surgery on 11th July, 2014. The surgery was performed by median sternotomy. The mass was compressing the trachea, innominate vein, both carotids and both phrenic and vagus nerves. All the structures were preserved and the mass was excised completely and sent for histopathology. The cervical and mediastinal lymphnodes were excised and the sample was sent to histopathology which confirmed lymphoblastic lymphoma. Three drains were placed and the chest was closed by standard procedure. She recovered unremarkably and was discharged.

DISCUSSION

Primary medistinal tumour is uncommon in infants and children with a morbidity of 0.4%.[3] However, benign masses in the anterior mediastinum are usually asymptomatic whereas malignant tumours can invade and compress mediastinal structures causing symptoms[3] which result in compression of superior vena cava (SVC), pulmonary artery, trachea, oesophagus, recurrent laryngeal nerve, phrenic nerve and sympathetic chain along with pleuro pericardial effusion.[4,5] This patient had obstructive symptoms such as cough and stridor. In addition, there was objective evidence of tracheal lumen compression. The most common tumours in children include, lymphoblastic lymphomas, a major subgroup of childhood non-hodgkins lymphoma (NHL), are highly malignant and 50–70% of them present with mediastinal masses.[6] Lymphoma are the most common aetiology of mediaastinal mass in the paediatric age group, accounting for 46–56% of all mediastinal mass in most series[7] and this is that we have seen in this patient as well. Between 50–70% of children with lymphoblastic lymphoma present with an anterior mediastinal mass. Out of which one-third of NHL have their primary sites in the mediastinum and two-thirds with HL presents with mediastinal lymphadenopathy.[8] The diagnosis of mediastinal mass is suspected on clinical presentations followed by imaging and laboratory investigations which include CXR, ultrasound or CT scan. This patient received a contrast CT scan to clarify the nature of the tumour and its relationship with the heart and great vessels. After preoperative imaging complete resection of the tumour took place with the aid of cardiopulmonary

bypass following median sternotomy for good surgical procedure and extended neck incision was made for vena cava branch exploration. Due to the movement and traction, the tumour formed adhesions with the surrounding structure, including trachea, innominate vein, both carotids and both phrenic and vagus nerves. The cervical and mediastinal lymphnodes were also excised completely. During surgery tumour was made loose, dividing it on the surface layer by layer and separating it from its root. There was no obvious damage done to the surrounding structure and both phrenic nerves were preserved. Recovery was fast and uneventful.

CONCLUSION

All the paediatric patients who present with the symptoms like hoarsness of voice, stridor or any other symptom for tracheal obstruction should be thoroughly investigated with CXR and CT scans. This should be followed by prompt surgical procedure to remove the tumour completely.

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SPECIAL COMMUNICATION

RASHTRIYA BAL SWASTHYA KARYAKRAM (RBSK) PROGRAMME IN INDIA AND ITS SCOPE IN PAKISTAN

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INTRODUCTION

Developing countries have been overtly focusing on reducing under-five mortality rate and have made variable gains in this reduction during the last decade. The Indian Government under the National Rural Health Mission, launched in year 2005, demonstrated a 36% reduction in under-five mortality rate (U5MR) from 2008 to 2013.[1] In order to reduce morbidity and mortality further, Rashtriya Bal Swasthya Karyakram (RBSK), an ambitious program that is aimed to cover 27 crore children in India, was launched in 2013. This take account of sick newborns discharged from health facilities, i.e., Special Newborn Care Units (SNCUs) in addition to regular screening of all newborns at birth, whether born at home or at public health facilities.[2]

Under Facility Based Newborn Care initiative in India, a series of Special Newborn Care Units (SNCUs) have been made operationalized. In the SNCU Technical reports, it was noted that 10% of the newborns die within these facilities and another 10% die within 1 year.[2,3]Under Home Based Newborn Care scheme, any infant born at home or at health facility, is followed up by series of home visits made by Accredited Social Health Activists (ASHAs).[4] The purpose of these visits is to identify early danger signs and prompt referral. Moreover, under Janani Shishu Suraksha Karyakram (JSSK) such newborn and children up to 1 years of age are entitled to free of cost treatment at any public health facility in the country. RBSK program is modelled on the progress made in the recent past under National Rural Health Mission, now called National Health Mission.[5] This program is aimed to screen and manage such children till 18 years of age on the lines of Universal Health Care.

Child Health Status in Pakistan:

According to World Health Organization (WHO), the main cause of mortality in children less than 5 years, all over the world in 2013 was prematurity. It also states that almost 50% deaths were due to infectious diseases. The other causes of death in children include pneumonia (13%), intra-partum related complications including birth asphyxia (11%), diarrhea (9%), neonatal sepsis (7%) and malaria (7%). Measles, HIV/AIDS and neonatal tetanus account for less than 2% of deaths in children under-five years of age.[6] According to another study, there are six diseases that account for 70% of deaths among children under-five years of age. These include pneumonia (19%), diarrhoea (18%), malaria (8%), measles (4%), HIV/AIDS (3%) and other neonatal conditions (37%).[7] In developing countries like Pakistan and India, leading cause of deaths in children is still infectious diseases, as compared to developed, where injuries is the leading cause of deaths, besides neonatal causes such as birth defects.[8]

According to United States Census Bureau (USCB), Pakistan is the world sixth most populous country in year 2014.[6] Globally, U5MR is 46 deaths per 1000 live births. It has reduced from 90 deaths per 1000 in 1990 to 46 deaths per 1000 in year 2013. There is 49% decline in U5MR from year 1990 to 2013. The number of under-five deaths declined from 12.7 million to 6.5 million during 1990 to 2013. Despite of such decrease in U5MR, seventeen thousand children die every day. Neonatal period is most vulnerable time for a child's survival. 2.8 million Neonates died before 28 days of life in 2013. Globally, neonatal mortality rate is declining; it has declined from 33 deaths per 1000 live births to 20 deaths per 1000 live births. U5MR is 76 deaths per 1000 live births in people with low income as compared to 6 per 1000 live births in people with high income.

In Pakistan U5MR are 86 deaths per 1000 live births. In 1990 and 2000, U5MR in Pakistan was 139 and 113 respectively. U5MR declined with annual rate of reduction of 2.1% from 1990 to 2013. Infant mortality rate declined from 106 deaths per 1000 to 69 deaths per 1000 live births from 1990 to 2013. Neonatal mortality rate declined from 56 to 42 deaths per 1000 live births from 1990 to 2013.[7]

Key Elements of RBSK:

Rashtriya Bal Swasthya Karyakram (RBSK) is an important initiative aiming at early identification and early intervention for children from birth to 18 years

This program is based on the Continuum of care model; that aims to screen and manage children for 4 D's, i.e., Defects at birth, Diseases, Deficiencies and Developmental delays including disabilities.

It intends to cover children of rural areas and urban slums from age 0 till 6 years and those enrolled in schools from grade 1st till 12th in Government and

Government aided Schools. Child Health Screening and Early intervention Services under RBSK envisage to cover 30 selected health conditions for screening, early detection and free management. The conditions are as following[2]:

Selected Health Conditions for Child Health Screening & Early Intervention Services	
Defects at Birth	**Deficiencies**
1. Neural tube defect	10. Anaemia especially Severe anaemia
2. Down's Syndrome	11. Vitamin A deficiency (Bitot spot)
3. Cleft Lip & Palate / Cleft palate alone	12. Vitamin D Deficiency, (Rickets)
4. Talipes (club foot)	13. Severe Acute Malnutrition
5. Developmental dysplasia of the hip	14. Goiter
6. Congenital cataract	
7. Congenital deafness	
8. Congenital heart diseases	
9. Retinopathy of Prematurity	
Diseases of Childhood	**Developmental delays and Disabilities**
15. Skin conditions (Scabies, fungal infection and Eczema)	21. Vision Impairment
16. Otitis Media	22. Hearing Impairment
17. Rheumatic heart disease	23. Neuro-motor Impairment
18. Reactive airway disease	24. Motor delay
19.Dental conditions	25. Cognitive delay
	26. Language delay

Scope of RBSK in Pakistan

Over 82.5 percent parents in Pakistan are first cousins, 6.8 percent are blood relatives, 6.3 percent belong to the same caste and family, and only 4.4 percent are married out of their families.[8]

A lot of international studies carried out in different parts of the world have also confirmed the hazards of consanguineous marriages which include birth defects.[9] The Indian Government should be given credit to have recognized the hidden issue of birth defects and developmental delays and shaping them in the form of RBSK, i.e., Universal Health care for children even when in majority of their population have a low risk of birth defects due to non-consanguineous marriages. Although, there is a reduction in U5MR rate in Pakistan through programs targeting traditional issues; yet the country has no program for birth defects and developmental delays even with a high risk due to consanguineous marriages. Pakistan should not wait for more time but should initiate policy discussions to develop a concept note or policy on same lines as the neighbouring country. RBSK can be integrated in programs already targeting child health like Maternal and Child Health Program (MNCH), National Program for Family Planning and Primary Health care and Integrated management of childhood illnesses (IMNCI) strategy.

There is a need for the country to plan and prioritize resources and in doing so, consider to start Early Intervention Centres in districts that have shown slower decline in U5MR or reported high number of children with birth defects. A National level Technical Resource Group and an Advisory Group is required to guide the Ministry of Health for planning, budgeting and detailing year wise activities.

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