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The Chaos theory is the study of nonlinear dynamics, in which seemingly random events are predictable from very simple deterministic equations. According to such mathematical models, it becomes easy to predict events for the future to an extent. In scientific terms, the word chaos does not depict complete disorder, rather a set of predictable variables through specific viewing angles. The social sciences use the word chaos in its literal meaning and hence claim that; “everything in order leads to eventual chaos.”

The same concept when applied to the versatile branches of science compels us to think that with the ever progressive compartmentalization of different sciences, it is becoming evident that such order might lead to chaos in the end. The human mind has the capacity to engulf, interpret and utilize the immense types and amounts of information; for example, trying to remember Ibn-e-Sina, who was an expert in diverse fields including medicine, philosophy, astronomy, alchemy, geography, geology, psychology, Islamic theology, logic, mathematics and poetry. This singular example is enough to explain the endless potential of the human mind.

With the passage of time the knowledge base of all fields of sciences has attained immensity. This stands true for medical sciences, and its sub/super specialties. In Pakistan we have reaped the fruits of advancement in medical knowledge and the development of exclusive subfields of medicine and surgery. We have come a long way from a life expectancy of 57 years in 1951 to almost 65 years in 2012. Yet based on our resource constraints, and inequitable distribution of health care delivery services, one thing comes to mind. Can we afford to place advanced medical services in restricted boxes, while we continue to ignore the issue of primary health care for the masses? Can we make the development of sophisticated specialized hospitals our priority, while the underprivileged many are forced to overcrowd our already overburdened tertiary care facilities, while the primary and secondary care set ups remain underutilized and poor equip with resources?

Medical advancements is a success story, to be proud of; yet this strict order, has the potential of leading towards chaos in the end; in which situation a public health expert fails to understand the jargon of the neurologist, or a radiologist is unable to communicate effectively with a psychiatrist. A generalist approach incorporating fields like public health, family medicine, primary health care seems to be the need of the hour, with enhanced focus on prevention rather than cure of complicated conditions through costly interventions.

Our policy makers both technical and administrative need to see the darker side of the picture and intervene in a more generalized manner. Improving the primary health care system would obviously reduce the burden the secondary and tertiary tiers of the health system, but for this we need to clearly identify and prioritize our problems. A final point to ponder are the career paths that we make accessible to the newer lot of health care providers need to be overhauled and adapted according to the needs of Pakistan’s marginalized majority.

References

CASE STUDY OF DISTRICT HEALTH INFORMATION SYSTEM PERFORMANCE FROM PUNJAB PROVINCE OF PAKISTAN

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Abstract

Background: The District Health Information System (DHIS) not only allows health services to enter, validate, and analyze routine data, semi-permanent data and survey data but it also helps to record information on health events and to monitor the disease trend, work overload, the availability of human/financial resources of the hospitals. The prime objective of this study is to identify the needs for improving the gray areas of the system for better health services utilization and performance evaluation.

Methods: This research was cross-sectional quantitative study. In this study yearly performance of 29 District Health Quarter (DHQ) hospitals and 84 Tehsil Head Quarter (THQ) hospitals throughout Punjab province of Pakistan have been compared based on the information received through DHIS. SPSS is used to analyze the data.

Results: The findings suggest that efforts by the Provincial and District HIS stakeholders have made the newly introduced DHIS functional in the Punjab province. However certain deficiencies have become evident from the results of the study relating to lack of capacity of the data related health personnel and non-use of information for evidence based decision making regarding the planning of various key performance indicators and improving health care delivery system.

Conclusions: On the basis of the results of this report signify that training and system strengthening strategies for improving performance may be developed for more efficient health care delivery system in the Districts.

Key words: District Health Information System, DHIS, Performance Evaluation, Health Information system

Introduction

The provision of timely and effective health care services is the key objective of any country's health system. However, this all could be referred to the availability of appropriate national health data to measure the national health status for onward health planning. DHIS is used in several developing countries in Asia and Africa [1]. Unfortunately DHIS is inefficient in provision of management information in most of the developing countries as instead of utilization of data the data at the level of generation, it is usually transmitted straight to provincial or National HMIS Units without even being checked [2]. Certain elements causes limited utilization of DHIS and reduce effectiveness of healthcare services management in these countries. These elements include: lack of DHIS infrastructures, proper assessment of essential information needs, data gathering and processing system and analyzing methods, appropriate methods of information presentation, proper interpretation of accumulated information, and lack of appropriate information based decision making and policy development [3, 4, 5, 6].

Realizing the importance of Health Management Information System (HMIS) the public health sector of Pakistan initiated data generation at national level under HMIS in early 90s. HMIS was transformed into DHIS during 2004 as it was found that district health management was more important on account of measuring service performance, efficient logistic management and future health planning [5]. The process led to revision of data collection indicators, tools and software. In 2006, DHIS was upgraded and implementation at district levels that was supposed to be carried out by the provincial health departments varies by province to province. Here, the encouraging point is that; health department of Punjab has implemented this system at all of its districts by 2007. In Pakistan the structure of data reporting in health sector is that the Basic Health Units (BHU) and Rural Health center (RHC) report to Tehsil Head Quarter (THQ) which further
reports to District Health Quarter (DHQ) and reports from DHQ forwarded to provincial level.

Currently, DHIS is the only routine data source for the Government managed hospitals so this research is of immense value for supervision, monitoring and evaluation of all health facilities reporting through this system, including secondary hospitals. Important point to note is that the DHIS is not an Electronic Health/Medical Record (EHR/EMR) system oriented towards clinical management of patients - it is fundamentally an action-oriented HMIS designed to reform and support the health sector, decentralized decision-making and local use of information. There is a great need of maintaining the culture of DHIS data collection from health services and its subsequent analysis and dissemination for improvement of both curative and preventive services [7]. The objective of this research was to explore the operational structure of the system through data generation, reporting mechanism, reliability and data processing functioning of health facilities.

**District Health Information System in Pakistan**

Health Information System (HIS) is mainly concerned with the health information of the community. Its main target is to ensure the effective uses of resources to improve the health service facilities of the community. HIS collects the data, analyze it and converts the data into information which is useful in managing the Health Information System. To manage the system the data must be reliable, accurate and timely [1]. HIS requires for its management from various sources, various types of data. Data collection includes disease surveillance, facility surveys and routine reporting to manage the health service statistics. These systems collect, analyze and convert data into useful information which is helpful in health system management [8].

In the last three years in Pakistan, DHIS is being harmonized at provisional and national levels. The focus is on areas in which the community has awareness of District Health facilities; concentration is on design, structure and functioning of DHIS components. Specific districts their performances in health sectors, yearly reviews and issues that require further attention are highlighted. District level development of HIS reflects the progress in the provision of health facilities [5].

Introduction of standardized data collecting tools improve the efficiency of healthcare settings [9]. It is also evident that unfortunately in many cases, standardized tools are not being used as they were designed [10]. Potential significant inefficiencies can be produced because of problems in design and data quality [11]. This is the reason for which we should facilitate the sharing of data collection and analysis of experiences at the provincial and national level.

Since implementation of DHIS in various provinces, shows progress in data collecting tools for daily recording and monthly compilation of DHQ, THQ and the patient linked information. These efforts for collection of data have helped for smooth and reliable data flows. Every DHQ and THQ has been provided with computers for proper data collection, analysis, presentation and storage. Presently, computers are used in DHIS and HIS routinely. Still, several districts need help to solve the hardware and software problems.

As time proceeds much improvement has been noticed in completeness and quality of data collected through DHIS [12, 13]. Many lapses and weaknesses in this system have been noticed. Few of them are reported as delays in submission of data due to non-delivery of forms, data quality unreliable, poor understanding of indicators, poor feedback and managers not maintaining data summaries [14,15,16].

**Methodology**

This was cross sectional quantitative study conducted in 10 districts of Punjab provinces (Rawalpindi, Jhelum, Sheikhupura, Faisalabad, Okara, Layyah, Bhakkar, Muzaffargar, Dera Ghazikhan, Rajun pur) of Pakistan. The data for analytical analysis were collected from the managerial and facility level through questionnaires. The managerial level questionnaire was administered at EDO-Health office, where the respondents were EDO-Health or DHIS Coordinators. On the other hand, at facility level the facility in-charges were the respondents accordingly. One questionnaire was developed for managerial level and other for facility level. Further, the questions were derived from the DHIS procedures manual and the monthly DHIS reporting forms to be used at primary health care and secondary Health Care Facilities. The questionnaires were based on three different key areas of the district health information system. In this research paper the results obtained on the one key area which is DHIS infrastructure & functions, will b presented. DHIS infrastructure & functions include the status of trained staff, availability of DHIS data sources and their daily updation.

For this study the selection of the districts was made from two types of areas, i.e. one where the devastating flood of 2010-2011 seriously damaged the public health settings. The second non-flood affected areas. For each district data was collected at 16 points, which were 1 managerial office (EDO-H office) while health facilities includes; 1 DHQ, 1 THQ, 3 MCH (Maternal Child Health) Centre, 3 Dispensary, 3 RHC and 4 BHU. The surveyed data was entered and analyzed in computer software SPSS version 16.

**Results**

**Respondents Profile at Facility Level**

The field survey at the targeted health facilities

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described that total nine DHQ were covered against the planned ten. Reasoning of this when confirmed was found that DHQ Hospital, Rawalpindi doesn’t report the monthly DHIS data to their EDO-Health. However, to cover the sampling size in number, an additional THQ of Rawalpindi district i.e. total 11 THQ Hospitals instead of planned 10 were covered. Majority of the respondents (88) were professionals and qualified officials. The Fig1 below shows the status of respondents by designation in details at facility level.

Comparing across the districts, it was observed that majority of the managerial level questionnaires 80% (8 out of 10) were responded by the statistical officers, who are also performing at the districts as DHIS coordinators as well as shown in Fig2.

It is observed that out of the total 75 health facilities, selected from the five flood affected districts (i.e. Layyah, Bhakkar, Muzaffargarh, DG Khan & Rajanpur), only five (05) facilities were reported to be affected which later on re-habilitated. The encouraging point that review team noted is; that the monthly DHIS data reporting being dealt with an integral part of the public sector healthcare delivery system. As each and every health facility either it is primary or secondary healthcare, regularly generating the health information of their respective areas.

DHIS trained staff at facility and managerial level
An accurate and reliable health data generation is the core objective of District Health Information System and this is absolutely dependent upon the health facility's incharges. Therefore, their training on the data generation tools and reporting mechanism seem more imperative. The surveyed data concluded that out of 150 incharges of the facilities, 133 (80%) got DHIS training. Whereas, at the remaining 17 health facilities, this activity is being accomplished either by untrained or self-trained personnel as shown in Fig3.

In this context the situation by districts revealed that 100% incharges shown in Fig 4 of the visited facilities at Bhakkar, D.G. Khan, Jhelum, Muzaffargarh & Okara got DHIS training. It was followed by Rawalpindi, Rajanpur, Sheikhupura and Layyah with 80% - 87%. However, comparatively less DHIS trained incharges (53% i.e. 8/15 health facilities) were reported from Faisalabad.
The surveyed data analysis has shown very good result; as out of the 150 staff deputed for this assignment, 138 (92%) had got such trainings. While analyzing the level of such staff, dispensers found to be higher in number (87), out of which 81 (93%) were trained. Other staff included; LHVs (total 22 and all trained), Medical Officers (total 20 and 16 trained).

Discussion
The current situation of DHIS as evident from the results of this study demands that the decision makers has to take initiative for further collaborations among various vertical health programs and integrated approach may adopted which will not only save the resources but also improve the efficiency of the District Health information System as a whole. The utilization of information at the facility level by improving capacity of the health managers and health providers will certainly produce a culture of evidence based decision making at the local level. Importance of capacity building is also evident by the studies conducted to assess the utilization of DHIS [17]. On the basis of the results of this report signify that training and system strengthening strategies for improving performance may be developed for more efficient health care delivery system in the districts this finding is also supported by a study conducted in Bostawana to improve the quality of health information system [18].

The current situation of DHIS as evident from the results of this study demands that the decision makers has to take initiative for further collaborations among various vertical health programs and integrated approach may adopted which will not only save the resources but also improve the efficiency of the DHIS as a whole. The utilization of information at the facility level by improving capacity of the Health Managers and health providers will certainly produce a culture of evidence based decision making at the local level. Importance of interoperability for the efficiency of health information system is evident by the previous researches as well [17,19]. On the basis of the results of this report signify that training and system strengthening strategies for improving performance may be developed for more efficient health care delivery system in DHIS. Significance of training in successful implementation and utilization of DHIS is also evident by studies conducted in India and Bostawana [18, 20].

Conclusion
The evidence revealed by this study urge the need of conducting such surveys in other provinces of the country to assess the functionality of the DHIS and use of information gathered for planning purposes.

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ORAL HEALTH CARE SYSTEMS ANALYSIS IN PAKISTAN; THE CHALLENGES BASED ON THE
WHO BUILDING BLOCKS FRAMEWORK AND THE WAY: FORWARD

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Abstract

'Oral health' is an integral part of general health but it has been greatly ignored globally particularly in developing
world. In Pakistan oral health care services are mostly limited to tertiary care hospitals which are curative in nature
with a downstream approach. There is no 'oral health policy guideline' at the national level and the health strategies
of the provinces, which were developed after the enactment of 18th amendment, do not address the oral health
needs of the population. The private sector mainly caters for the oral health services and those who can afford
purchase services through out of pocket spending. There lies a dearth of dental workforce in Pakistan especially in
rural areas. There is no proper national, provincial or district level record on quality, utilization and coverage of oral
health services, resource management, monitoring and outcome evaluation. The lack of spending on oral health,
inability to focus on new low cost technologies, preventive approaches and health promotion are one the main areas
to be addressed.

There is a great need for developing national oral health policy guidelines based on community needs and
available resources. At primary care level, the government may introduce front line oral health workers for provision
of preventive and essential oral health services. The WHO guidelines in terms of financing, work-force and use of
low cost technologies such as 'Basic Package of oral care' should be adopted and followed in true spirit for
integration of primary oral health care into primary health care for improved outcomes. This paper intends to
summarize and highlight the issues and challenges based on the authors' observation and available literature.

Key words: Oral Health, WHO Building Blocks, Health care systems analysis, Issues and challenges

Background:

Oral health is an important component of general health and is crucial for wellbeing. The oral health has been
greatly ignored by majority of the health systems globally especially in the developing world. [1]

The Alma-Ata declaration in 1978 introduced the initial concept of primary health care (PHC) which initially did not include the strategy for integration of oral health into general health. In 1983 the World health organization (WHO) through its decision making body i.e. World Health Assembly declared oral health as a part of 'health for all' strategy. [2] In 1994 the World Health Day was devoted to oral health with a theme "Oral health for a healthy life" to reflect its importance. [3] In 2003, the WHO launched a 'Global Health Program' in response to increasing burden of oral health diseases worldwide which mainly focused on prevention of disease and promotion of oral health. [4] Later in 2007, the World Health Assembly emphasized on the need for including oral health in prevention and control of non-communicable diseases within the framework of enhanced primary health care. The World Dental Congress Declaration held at Tokyo, Japan in March 2015 stresses on oral health for healthy longevity and urges health policy-makers and professionals for taking measures to reduce the global burden of oral health disease, to promote greater equity and integrate oral health promotion into the prevention and control of diseases. [5]

In the twenty first century, primary oral health care has gained considerable importance around the globe and several countries have adopted it in their existing primary healthcare system.

Pakistan ranks at 146 out of 187 countries in human development index and spends only 0.5% of GDP on the health sector which includes oral health services. [6] With such scarce resources it is difficult to cope up with the provision of dental treatment and oral
disease prevention and promotion. [7]
The challenges to oral health care system of Pakistan are huge and described below under the headings of WHO building blocks for a better analysis and understanding. [8]

**The WHO Health System Framework**

1. **Health Service Delivery:**
Pakistan has a three tier extensive health care delivery system (Primary, secondary and tertiary) which is aimed to provide optimal health care delivery to the communities. Unfortunately this is not the case, majority of the population do not have access to adequate, affordable and acceptable health services including oral health. The oral health services provided by the public sector are curative in nature with a downstream approach. The FLCFs (BHUs & CDs) do not cater oral health services and the rural health centers (RHCs) are expected to contribute in curative oral health services of majority of the population (62%) of Pakistan. [9]
The services provided at the secondary level hospitals (THQs, DHQs) are disease centered and limited to tooth extractions and simple restorations. The tertiary care hospitals are overburdened and cannot cope up with the patient load thus compromise on quality. The available services are unable to cater the needs of elderly, women and children and as per a national study around 50% of children aged 12-15 years have dental caries and majority of the lesions are left untreated. [10]
The private sector (individual clinics and hospitals) mainly caters for the oral health services and those who can afford purchase services through out of pocket spending over the counter. Due to a complex nature of dental treatment services, the cost is too high and is beyond the reach of majority of population. [11]

2. **Health Workforce:**
There lies a dearth of dental workforce in Pakistan especially in rural areas. As of April 2015, the total number of registered dentists by PM&D is 14,627 making a dentist population ratio of 1:1305811 whereas WHO recommends a dentist population ratio of 1:7500 for developing countries. [13] Out of these 14,627 dentists, over 60% are females who are usually reluctant to serve in rural areas because of lack of facilities and incentives by the government. Because of the limited literature available the total number of professionally active dentists is unknown anyhow as per PM&D estimates around 50% of female dentists leave the profession after graduation. There are around 638 RHCs in the country with a sanctioned post of dentist to cater the 60% of rural population of the country. The dentist population ratio in rural areas of Pakistan is estimated to be 1:200,000. [14] The RHCs where the dentist are posted and available, majority of them lack with availability of proper equipment and materials.
There is dearth of dental public health professionals due to lack of incentives and unavailability of service structure in the public sector. Few provinces have created and implemented a special cadre for health management and the dental public health professionals are not included in the cadre. Such factors have promoted the ‘brain drain’ from the country and the dental public health personnel are forced to work outside the country in various organizations and academic institutes.

On an estimate by FDI, in 2003 there were around 40,000 non-qualified dental practitioners in Pakistan who are providing services to the community but their role is not recognized by any regulating authority or PM&D. The non-qualified practitioners are usually blamed for spreading blood borne diseases, as majority of them lack knowledge on cross infection or lack equipment for infection prevention.

3. **Health Information System**
A strong and robust health information system generates evidence which forms the basis for policy development and planning of a health system. In Pakistan the oral health information system do not have a proper mechanism to collect data on disease prevalence and patterns, individual studies have been conducted by researchers in localized areas but at the national level there was only one pathfinder study conducted in 2004 with the funding of WHO. There is no proper national, provincial or district level record on quality, utilization and coverage of oral health services, resource management, monitoring and outcome evaluation.

4. **Access to essential medicines/ Technology**
The lack of spending on oral health and inability to focus on new low cost technologies and preventive measures like water fluoridation, fissure sealant and community
based restorative techniques for dental caries treatment, screening programs for oral cancer, are among the major challenges. The specialized services available in public sector tertiary care hospitals are less equitable to a major chunk of population because of an urban-rural divide. Secondly the treatment techniques provided in the public sector are mostly outdated and do not meet the demands of patient on aesthetics and functionality.

5. Financing
Pakistan's spending on health sector is 0.5% of its GDP, which is among the lowest compared to other countries on the other hand WHO recommends at least 5% of GDP spending on health.15
There is no specific budget allocated for oral health and the allocated budget for health is mostly directed towards control of other infectious diseases and illnesses. There are no specific programs funded for oral health promotion and prevention at primary level. Majority of the population is under served by the public sector and patients are forced to seek health from private sector, which has resulted in an out-of-pocket expenditure on health around 80%.8

6. Leadership/Governance
The current patterns and the level of seriousness of the government show lack of leadership commitment. The role of government leadership in considering the fact that "health is a basic human right" seems to be questionable.
There is no national policy guideline on oral health and the health policy of Pakistan 2001 does not properly address oral health.11 The rules on mandatory service in rural areas are not implemented in true spirits by the authorities which has resulted in concentration of dentists in urban areas.

Discussion and the Way Forward:
Oral health plays an important role in overall health of communities and is linked with the quality of life therefore it cannot be excluded out of general health. A resource scarce country like Pakistan has to shift its health systems approach towards prevention and equitable access of quality oral health services with an emphasis on rural populations.
Integration of Primary oral health care into the existing primary health care system of the country is one among the various steps which several developing countries around the globe have implemented and benefited. The available PHC health workforce (CMWs, LHV, and LHVs) can be trained for oral health education/promotion in communities and early diagnosis and timely referrals of the cases to health facilities. At the primary care level, the government may introduce front line oral health workers "Dental hygienists" based on World Health Organization guidelines and successes from the Thailand, Malaysia, Fiji and New Zealand may be followed for provision of preventive and essential oral health services at FLCFs.17 The 'Common risk factor approach' concept may be adopted in the form of 'Oral health promoting schools' with collaboration of Education department and private school associations to discourage availability of junk, cariogenic and carcinogenic foods in school cafeterias and outside of schools premises.16 The teachers need to be sensitized to play their important role in promoting positive oral health behaviors among school children.

A strong commitment from the leadership is required to recognize 'health as a basic human right' and consider oral health a part of general health. Allocating a fair percentage of financial resources for health and specifying a budget allocated for oral health will be the key step towards universal coverage and reducing out of pocket payments. In this regard World Health Organization recommendations of 5% GDP allocation to health sector may be adopted for a reasonable allocation to oral health sector.

There is a dire need for research to analyze oral health systems critically and systematically with a holistic approach to build evidence in local context and for developing and implementing a policy framework at national level. The leading national public health academic/research institutes can be taken onboard by the provinces for authentic data on community needs assessments and developing their oral health strategies. Health services research will provide a start point to address the complexities within the system and investigating the socio-demographic factors, organizational and financial processes for a robust oral health care system.

Conclusion and Recommendations:
Oral health care in Pakistan is a neglected sector, a strong political will and fair financial allocations is required to address the issues in oral health care system and improve equitable access to oral health care. There is a great need for developing a national oral health policy guidelines based on community needs and available resources. Provinces can further adopt these guidelines in their health strategies for a high quality, responsive, equitable and accessible oral health care delivery system.
The WHO guidelines in terms of financing, workforce and use of low cost technologies such as 'Basic package of oral care' should be adopted and followed in true spirit for integration of primary oral health care into primary health care for improved outcomes.

References:
HIV/AIDS is an infectious disease [1] transmitted via exchange of body fluids [2]. Drug injection is one of the most important cause of its transmission and according to an estimate 15.9 million people inject drugs globally of which 3 million are HIV positive [3]. Largest numbers of injectors are found in China, USA and Russia where HIV prevalence among injectors is 12%, 16% and 37% respectively [3].

Pakistan was once regarded as an AIDS free country with first case being recorded in 1986 but with time the prevalence of HIV/AIDS has increased to a significant level (HIV and AIDS in Pakistan the battle begins)[4]. In 2005-2006, 9% of Injection Drug Users were found to be HIV positive and it gradually rose in subsequent years [5] which indicated that HIV/AIDS among IDUs is an emerging threat for Pakistan [6].

Objectives

The main aim of this study was to provide a concrete relationship between injection drug use and prevalence of HIV/AIDS which could, in future, help the health policy making bodies to formulate policies of Pakistan accordingly.

Methodology

Study Design

In data collection, we extracted the percentage (%) rather than number of IDUs as percentage (%) gives a better chance of making a fair comparison. Then, the collected data were divided into 3 categories, (a) Firstly, percentage prevalence of AIDS among IDUs in "cities" was extracted.

(b) Secondly, percentage prevalence of AIDS among IDUs in "provinces" was calculated. For this calculation the percentage prevalence of HIV/AIDS among IDUs in cities of a particular province were summed and then divided by the number of cities to get the mean value for that particular province. (C) Finally, the percentage prevalence of AIDS among IDUs in "Pakistan" as a whole was extracted.

All the data extraction was manually done by reviewing the selected articles.
the articles thoroughly. We did it separately and any discrepancy was sought after sessions of logical discussion. Final data were tabulated and graphed.

Search Strategy
We systematically searched GOOGLE SCHOLAR, PUBMED, WHOLIS and EMBASE for articles and reviews published since 2009 up to the present time. The mesh terms used for searching the articles were either single words or combination of words in the quest to find relevant articles. These include 'HIV', 'AIDS', 'Pakistan', 'Prevalence', 'Drugs', 'IDUs'. The combination of these key words include 'HIV in Pakistan', 'Prevalence of HIV in Pakistan', 'Prevalence of HIV among IDUs', 'Prevalence of HIV among IDUs in Pakistan', 'Prevention of HIV/AIDS' and 'Control of IDUs'. All the articles, we reviewed, were in English.

Selection Criteria
The inclusion we did was title focused. We selected literature from those articles which were published between 2009 and 2014. Any article published before this time was excluded. For data collection, we selected articles from 2006 onwards. Some articles having data of HIV/AIDS prevalence among IDUs before 2006 were not included. Few among them had data of both before and after 2006 they were also excluded. The articles having information regarding incidence data and risk population data of HIV/AIDS among IDUs was excluded. We did thorough exclusion in 4 steps. Firstly, those articles which were published before 2009 were excluded. Secondly, the duplicated articles were removed (this work is done manually by the authors of this article). Thirdly, exclusion was made by reading titles and abstracts. Fourthly, articles were excluded by scanning the full texts. It is depicted in the flow sheet in figure 1.

Figure 1: Search Strategy

Statistical Analysis
The aim of our research was to estimate the percentage prevalence of HIV/AIDS among IDUs in cities, provinces and whole country and for that we collected 3 sets of readings each having a time period of 2 years i.e. ranging from 2006 to 2007, 2008 to 2009 and 2010 to 2011. During the data extraction of the cities and provinces some of them had more than one reading in a particular time period, to counter those uncertainties both the readings were summed and mean was calculated. If percentage (%) prevalence data of one year was available (for a particular city or province), it was taken as percentage prevalence in the two year time group (To cope with insufficient data). If there were 3 or 4 readings then the most deviated one from among them was excluded and mean was taken for the remaining readings e.g. we had 6 different HIV/AIDS percentage prevalence readings among IDUs in Lahore these were 6.5, 11.0, 11.0 3.8, 6.5. The most deviated one is 3.8. So we excluded it to find the mean percentage HIV/AIDS prevalence among IDUs in Lahore. Table 1 shows the percentage (%) prevalence of HIV/AIDS among IDUs in major cities of Pakistan. We were unable to find data for some cities in particular year groups so these places were left blank.

We estimated the percentage (%) prevalence of HIV/AIDS among IDUs in four provinces of Pakistan (i.e. Baluchistan, Khyber Pukhtoon Khawa (KPK), Punjab and Sindh.) by using available data from the cities. The percentage (%) prevalence of HIV/AIDS among IDUs of those cities which were in particular province were added and divided by total number of cities to find percentage prevalence of HIV/AIDS among IDUs in provinces (Mean percentage (%) of cities= estimated percentage (%) prevalence in province). See Table 2 and Figure 2. We were unable to find data for Quetta and Turbat in year group 2008-2009, so this area in Baluchistan column is left blank.

Finally, percentage (%) prevalence of HIV/AIDS among IDUs in whole Pakistan was analyzed. This was done by extracting the data from different articles. This is shown in figure 3 and table 3. We did not estimate prevalence of HIV/AIDS among IDUs in Pakistan by simply taking mean of the percentage prevalence of provinces because different provinces have different population density and different IDUs density. Since this is a systematic review, there is hardly any ethical concern.

Results, Discussion, and Conclusions

Results
Of 83 articles that we searched, we identified 17 studies that were eligible for inclusion in this systematic review (See figure 1). 7 of 17 studies were used to extract and evaluate data for percentage (%) prevalence of HIV/AIDS among IDUs in major cities of Pakistan. 4 of
17 studies were used to extract and evaluate data for percentage (%) prevalence of HIV/AIDS among IDUs in Pakistan. Now, if prompt preventative measures are not taken to control HIV/AIDS, it is expected to rise (of Faisalabad) to 65/75 % by 2025 [7]. In 2011, Faisalabad had the largest population density of IDUs i.e. 8.1/1000 [7]. By viewing the above graph we can deduce that with an increase in number of IDUs there is a relative increase in prevalence of HIV/AIDS. Sargodha also faced an explosive HIV epidemic, it had 9% HIV prevalence among IDUs in 2005 but this figure increased up to 51.3% in 2006 which is indeed a grave condition [8]. The data proved that there is a noteworthy rise in prevalence of HIV/AIDS at a provincial level (except for Sindh) and also at a national level.

<table>
<thead>
<tr>
<th>Year</th>
<th>2006-2007</th>
<th>2008-2009</th>
<th>2010-2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area</td>
<td>Percentage (%) prevalence of HIV/AIDS among IDUs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Pakistan</td>
<td>16.2</td>
<td>20.8[7]</td>
<td>34.4</td>
</tr>
<tr>
<td>Faisalabad</td>
<td>13.3</td>
<td>12.0</td>
<td>52.5</td>
</tr>
<tr>
<td>Gujrat</td>
<td>46.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hyderabad</td>
<td>7.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Karachi</td>
<td>23.7</td>
<td>30.5</td>
<td></td>
</tr>
<tr>
<td>Lahore</td>
<td>28.0</td>
<td>23.1</td>
<td>47.1</td>
</tr>
<tr>
<td>Larkana</td>
<td>16.0</td>
<td>28.0</td>
<td>18.8</td>
</tr>
<tr>
<td>Multan</td>
<td>0.3</td>
<td>25.0</td>
<td></td>
</tr>
<tr>
<td>Rawalpindi</td>
<td>3.0</td>
<td>12.3</td>
<td>20.0</td>
</tr>
<tr>
<td>Quetta</td>
<td>9.5</td>
<td>7.15</td>
<td></td>
</tr>
<tr>
<td>Sikkim</td>
<td>14.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sargodha</td>
<td>51.8[10]</td>
<td>40.6</td>
<td></td>
</tr>
<tr>
<td>Sukkur</td>
<td>19.2</td>
<td>19.2</td>
<td></td>
</tr>
<tr>
<td>Faisalabad</td>
<td>21.4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Percentage Prevalence of HIV/AIDS among IDUs in major cities of Pakistan.

<table>
<thead>
<tr>
<th>Year</th>
<th>2006-2007</th>
<th>2008-2009</th>
<th>2010-2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Province</td>
<td>Percentage prevalence of HIV/AIDS among IDUs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baluchistan</td>
<td>9.5</td>
<td>14.3</td>
<td></td>
</tr>
<tr>
<td>KPK</td>
<td>3.0</td>
<td>12.5</td>
<td>20.0</td>
</tr>
<tr>
<td>Punjab</td>
<td>18.2</td>
<td>13.8</td>
<td>52.9</td>
</tr>
<tr>
<td>Sindh</td>
<td>30.8</td>
<td>27.2</td>
<td>25.7</td>
</tr>
</tbody>
</table>

Table 2: Percentage prevalence of HIV/AIDS in provinces

<table>
<thead>
<tr>
<th>Year</th>
<th>2006-2007</th>
<th>2008-2009</th>
<th>2010-2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faisalabad</td>
<td>Percentage (%) prevalence of HIV/AIDS among IDUs in Faisalabad</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006-2007</td>
<td>16.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008-2009</td>
<td>20.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010-2011</td>
<td>34.4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3: Percentage (%) prevalence of HIV/AIDS among IDUs in Pakistan.

<table>
<thead>
<tr>
<th>Year</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006-2007</td>
<td>13.3</td>
</tr>
<tr>
<td>2008-2009</td>
<td>12</td>
</tr>
<tr>
<td>2010-2011</td>
<td>52.5</td>
</tr>
</tbody>
</table>

Table 4: Percentage (%) prevalence of HIV/AIDS among IDUs in Faisalabad

Figure 2: Percentage (%) prevalence of HIV/AIDS among IDUs in provinces.

Figure 3: Percentage (%) prevalence of HIV/AIDS among IDUs in Pakistan.

Figure 4: Percentage prevalence of HIV/AIDS among IDUs in Faisalabad.
Discussion
In order to cope with HIV/AIDS havoc, two programs are formulated by the government of Pakistan. One of them is National AIDS/HIV Control Program (NACP) which has 20 Centers all over Pakistan for AIDS/HIV reduction [9]. The other is National AIDS/HIV strategic framework which has a target to improve HIV status [10]; enhancing interventions among vulnerable groups, preventing transfusion related infections and has a total budget of 2.9 billion rupees [11]. On the other hand, 50 NGOs are working to have better estimate of HIV/AIDS prevalence and to reduce HIV/AIDS incidence. 2nd Generation Surveillance for HIV/AIDS was done by an agreement between NACP and Canadian International Development Agency [12]. Under this surveillance, status, changing trend and progress of HIV/AIDS epidemic was checked. Sindh AIDS control program in collaboration with World Bank is working in Karachi. Nai Zindagi (new life) is actively taking part in AIDS/HIV reduction programs in Lahore, Faisalabad, Sialkot and Sargodha [13]. Ironically, there is hardly any new policy and no improvement in these policies since long [14]. Although Pakistan has low budget [15] but even then it is the responsibility of health policy makers, who are highly qualified intellectuals, to formulate some heavenly policies to cope with this newly emerging threat [16]. Most of IDUs having AIDS are unaware of mode of transmission [17] plus they are illiterate [18] and they can't follow long treatment courses [19] i.e. either substance abuse therapy for HIV/AIDS [20] or anti-retroviral treatment [19]. Moreover, opioid substitution therapy isn't available for detoxification and the only method which is available is 2-4 weeks long via cold Turkey method which has a relapse chance of at least 80% [13]. So most of the affected people leave their treatment unfinished [21]. HIV/AIDS is mostly caused by unethical or unsafe practices due to which it is also frowned upon in society, so HIV affected people are stigmatized in organizations [22, 23, 24, 25] and have fewer opportunities for progression [26]. In fact, it is their personal matter so why to bother them! IDUs know how to respond to the key questions and their replies often don't match with the practices they carry out [27]. So these people keep on carrying out unsafe injection drug use which increases the risk of spread of HIV among them. There is hardly any organizational database for registration of HIV/AIDS cases. All these working organizations have low budget [15], lack of political will [28, 29] and these organizations can't have access to the IDUs of whole Pakistan [30]. Other limitations in preventing the spread of HIV include: easy accessibility of drugs due to smuggling [31, 32], poverty [33] etc. Conclusion and recommendations
It seems difficult or maybe impossible for government and other controlling bodies to maintain their grip on spread of HIV/AIDS [34]. Studies have been done policies have been made but what they forgot was to "implement" them? The effectiveness of the policies is also dubious because the results are not fruitful yet [35]. Can we say that all the efforts have gone in vain? Yes we can because the figures HAVE BEEN rising, the figures ARE rising and they will continue to rise if we work at a pace in which we are working right now (see tables and graphs). Currently success still seems like a mirage in a desert. Is it lack of political will [36]? Is it corruption [37]? Is it denial [38]? Is it lack of coordination between Government and NGOs? Whatever it is one thing is for sure, that it is a grave issue which needs to be solved [11].

Solving this issue still requires proper attention. First of all we have to find the root causes which compel people to join these unsafe injection drug use practices. Most of them start these practices due to poverty [33] or unemployment, if we provide jobs even small scale jobs will be quite helpful in this scenario then the people won't be idle so they cannot fall victims to these social evils (to root out stigmatization) [22,23,24,25]. And in doing so we will be able to reduce the IDUs population, as less number of people will be joining these practices. Secondly we should target those that have already joined these unsafe practices. For them we should construct proper rehabilitation centers with proper therapies according to international standards and most importantly we should provide employment to rehabilitated IDUs because when they enter society again the society may or may not accept them. If society does not accept them then it will increase their chances of starting these unsafe practices again. The government should take strict action against all those involved in drug smuggling [31, 32].

Funding source
There is hardly any funding source.

Ethics
Since this is a systematic review, there is hardly any ethical concern.

We acknowledge
Dr. YousuffMemon, Community Health Sciences (CHS), Aga Khan University, Karachi.

References


FACTORS AFFECTING PRESENTATION SKILLS OF MASTER OF SCIENCE IN PUBLIC HEALTH STUDENTS IN A POSTGRADUATE PUBLIC HEALTH INSTITUTION OF PAKISTAN.

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Abstract

Background: Healthcare professionals need continuous improvement in their skills to excel in their profession. Being able to make an effective presentation is one of the basic attributes expected in the field of public health. There is lack of evidence from developing countries about quality of education in enhancing public health professionals’ ability to make effective communication with the audience.

Methods: Analysis of retrospective data of three batches of Master of Science in Public Health students cohorts. The objective was to assess their oral presentation skills in a classroom environment.

Results: The participants were mostly males with a mean age of 36 years. The majority of them were from medical background. We found no association of presentation skills with age, gender, experience, English language competence, mechanics and eye contact during presentation, and elocution of the participant. However, presentation skills were found to be associated with overall organization (Odds Ratio (OR) = 5.5, 95% Confidence Interval (CI): 1.27-23.74), subject knowledge (OR = 3.64, 95% CI: 1.03-12.80), use of graphics in presentation (OR = 11, 95% CI: 1.35-89.70), discussion period (OR = 6.6, 95% CI: 1.35-32.37), and computer skills (OR = 7.8, 95% CI: 1.91-31.78).

Conclusion: We conclude that for enabling postgraduate public health professionals in making good presentations, capability to organize their presentations, having good subject knowledge, presenting data with graphics, knowledge and skills to use computers, and discussion of their results with audience are important factors affecting their skills in making good presentations.

Keywords: Presentation skills, public health, students, education, developing country.

Background

During the life span of a medical student in a medical college, s/he seldom thinks of developing good communication skills [1]. In this respect, students’ self-assessment of a need for improvement may play a role in developing an attitude towards continuous improvement. This is usually influenced by their demographic and educational background [2]. Usually, they have both positive and negative attitudes in developing their communication skills. However, improving teaching methodologies and guidance can harness negative attitudes and encourage positive ones [3]. In the absence of organised training programmes on making presentations and improving their communications skills, students frequently learn by trial and error [4]. It has been observed that even after they graduate from medical school or college, and are placed in a managerial position, they lack written and oral communication skills [5]. Professionals, along with other necessary skills, need appropriate presentation skills to excel in their careers [6]. Potential hiring sectors appreciate excellent oral and written communication skills along with other essential attributes of personality and professionalism [7]. Professionals opt for courses like Master of Public Health (MPH), Masters in Health Administration (MHA) and other master-level courses in the field of public health sciences. These courses are designed to improve their knowledge base and to polish their communication skills, where their backgrounds have some influence in acquiring those skill mixes [8]. In this article, we argue if the diverse groups of Master of Science in Public Health (MSPH) applicants have similar level of oral communication skills individually within a group and among groups in a public health institute of Pakistan.

Rationale:

There is a lack of evidence on quality of postgraduate...
education in Pakistan. As a first step, it is imperative to explore the quality of inductees in postgraduate courses in higher medical education in the country.

The aim of the study was to improve the quality of the graduates of MSPH course from the institute. The study objective was to determine the oral presentation skills of the participants in classroom environment.

**Methods**

**Study setting**

The study was conducted in a postgraduate public health institute of Pakistan and included three consecutive batches of two years' Master of Science in Public Health course.

**Study design**

This study was the analysis of retrospective data collected over three years at one point of time. Three consecutive batches of MSPH were included in the study. The study was composed of two parts. The first part included Students' self-assessment forms, when they apply for admission in the institute, and the second part was their proposal presentation judged on a uniform checklist by two to three examiners. The registrar office of the institute provided filled forms of admission applications of the enrolled students. The copy of the form included items of interest such as age, gender, qualification, experience, nature of job, English language skill and computer skills. We disregarded any personal information of the participants and only included the variables of interest while entering data into Microsoft Excel.

**Results**

The students were evenly distributed for all age groups from 25 to 45 years with a mean age of 36 years and a standard deviation of 6.085. Fifty nine percent of the participants were male. The majority of them (58%) had an experience of 1-5 years. Nearly half (52%) of the participants were medical officers with a few house officers (19%), hospital administrators (6%), nurses and instructors (4%), and dental surgeons (2%). Almost all of them rated their English language skills as good, while majority (63%) were confident about their computer skills.

Students' presentation skills were assessed on a check list (Appendix-A). It was rated on a scale of "Excellent", "Fair", "Good" and "Poor" based on cutoff point at 5 score out of 10. We found that for English language skills, 28% of the participants had excellent skills based on our criteria. Sixty five (65%) of the participants were graded as good and 7% were having fair English language skills. None of the participants had poor English language skills.

For the use of computers, 19% had excellent, 47% had good, 31% fair and three percent were having poor skills. Eleven percent (11%) of the participants could use graphics effectively in their presentations and were graded excellent. Twenty seven percent (27%) were good and same percentage was graded fair in the use of graphics in presentation. Nineteen percent (19%) were poor in using graphics.

Regarding their subject knowledge, 21% had excellent, 47% had good, 24% fair and 6% poor scores. Eye contact by the presenter was excellent in 15%. Thirty five (35%) had good eye contact, 21% had fair and 13% were with poor eye contact among the study participants. The participants' elocution was graded excellent in 23%, good in 44%, fair in 15%, and poor in 2%. The discussion period lead by the participants was judged as excellent in 18%, good in 28%, fair in 22%, and poor in 16%.

Our univariate logistic regression analysis revealed no association of presentation skills with age, gender, experience, English language competence, mechanics and eye contact during presentation, and elocution of the participant. Presentation skills were found to be associated with overall organization (Odds Ratio (OR) = 5.5, 95% Confidence Interval (CI): 1.27-23.74), subject knowledge (OR =3.64, 95% CI: 1.03-12.80), use of graphics in presentation (OR =11, 95% CI: 1.35-89.70), discussion period (OR= 6.6, 95% CI: 1.35-32.37), and computer skills (OR= 7.8, 95% CI: 1.91-31.78) (table 2).

**Discussion**

Bordage, G and co-authors have documented the importance of oral communication skills as one of the attributes of being hired for managerial and leadership roles in organizations [7]. Furthermore, a physician is considered to have good communication skills as s/he has to communicate with patients in the clinics and wards, and with fellow colleagues discussing and making presentations [9]. Most of our respondents went through their clinical training during professional life and it was expected that they should have had good communication and presentation skills [10].

In our study, participants' overall organization of the presentation, subject knowledge, computer skills, use of graphics in presentation, and their discussion periods resulted in significantly improved presentations. Overall organization of the presentation leads to a good presentation. Studies done by Learning, and Garon, J showed similar results to our study and it is well-understood that an organized presentation testifies good presentation skills of a presenter [11, 12]. A well-organized presentation reflects on the professionalism of the presenter [13]. In our study we have found that having a good overall organization is 5.5 times more likely to predict having participants' better presentation skills than the ones who do not organize their presentation well.

Subject knowledge is the main-stay for making good and effective presentation. K Seta and M Ikeda have written extensively on this aspect of cognitive domain and our study results are not different from the
existing literature [14]. We have also found participants having good subject knowledge being 3.64 times more likely to have good presentation skills than the ones who did not have it.

Graphical representation usually improves the outlay, understanding and impression of a Power Point presentation [14-16]. In our study, presentation skills were also influenced by this effect. The participants who used graphics in their presentations were 11 times more likely to present well than the ones who did do so.

Giving enough discussion opportunity between the presenter and the audience is usually considered part of a good presentation, and a good method in teaching in medical sciences [17, 18]. We observed that the presenters who engaged the participants in good discussion were rated high. They were more likely to have better presentation skills than the others within study population. It helped in breaking the barrier between the participants and the audience, and made the concepts easier to understand [19].

Use of computers is now a norm in typical class room teaching. They are one of the important transferable skills for under and post graduate students. Teachers and presenters perceive themselves as technically sound and confident when they use computers for their lectures and presentations. Better computer skills lead to good presentations [13, 20, 21]. Participants with better computer skills were also good at presentation. Thus, presenters with better computer skills are able to make better presentations. It is evident that postgraduate public health professionals would benefit from robust trainings on transferable skills for their professional development and excellence [22].

Making an eye contact is one of the prerequisites for delivering a good presentation. In our study, we did not find that the students who had had good eye contact with the participants also made good presentations. Our results do not support Jannette Collins findings regarding making good presentations [11]. However, we do believe the good eye contact helps making an effective presentation, and our limited sample size perhaps was not enough to reveal this attribute of the presenters [12].

Conclusions
We conclude that for enabling postgraduate public health professionals in making good presentations, capability to organize their presentations, having good subject knowledge, presenting data with graphics, knowledge and skills to use computers, and discussion of their results with audience are key to developing their skills in a developing country’s perspective.

Competing Interests
The authors declare that they have no competing interests whatsoever in this study and the study was conducted for entirely research purposes.

Authors’ Contributions
Ejaz Ahmad Khan conceived the idea designed and conducted the study. He also contributed towards analysis of data and write-up of this article

Zahid Ahmad Butt conducted the analysis, contributed towards the write-up and proof reading.

Saleem M Rana and Abida Mujahid contributed in the write up and proof reading.

Acknowledgements
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References


FACTORS RESPONSIBLE FOR NON-COMPLIANCE OF TIMELY ADMINISTRATION OF BCG VACCINE IN DISTRICT JHELUM PAKISTAN

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Abstract

OBJECTIVES: To assess factors for the non-compliance of BCG administration at appropriate time, primarily. This was also to find level of awareness of parents regarding the EPI schedule in District Jhelum; to assess timely vaccination with special emphasis on BCG; and to discuss the tangible factors for delay and their remedial measures.

METHODS: A cross-sectional study was conducted in District Jhelum, over a period of six months, with the target population of all parents having children > 2 years of age. A representative sample of 450 parents having children of less than two years of age was selected. Data was collected through a questionnaire by teams of two members- one male and one female. Data was entered in MS Excel and analysed using SPSS, Version 20. For qualitative analysis, interviews of the key persons of Dist. Jhelum in EPI and their suggestions and recommendations were gathered for the remedy.

RESULTS: Out of 450 children under 2 years, 164, i.e. 36.4 %, were vaccinated with BCG during the first seven days after their birth. Regarding the awareness of parents about EPI 389, i.e. 86.4 %, are aware of EPI. Monthly incomes greater than 20,000 Rupees, 90.8 had their child vaccinated within the first week. This shows that only 36.4 % were vaccinated during the first 7 days, while the remaining was vaccinated after the first week of their life signifying the noteworthy delay in the administration of the vaccine.

Regarding the qualitative part of the study, it was revealed that the factors for delayed BCG vaccination were 20-dose vile, inadequate resources including logistic, and manpower and inefficient supervising and monitoring.

CONCLUSIONS: This study concludes that there is a significant delay in timely vaccination in children even with generally omniscient parents regarding the EPI schedule. Increase in the respective household incomes, educated parents- especially mothers, deliveries in hospitals, outreach vaccination, punctuality of the vaccinator and the mother's 'more than' two antenatal visits are factors that help raise BCG-vaccination rates. Thus the introduction of the single-dose vial, the provision of resources and strict monitoring can help alleviate these concerns.

KEY WORDS: EPI, BCG, Vaccine, Timely.

INTRODUCTION:
Vaccine-preventable diseases are major causes of infant mortality and under-five mortality. Twenty seven percent deaths in Pakistan among under-five children are attributed to these vaccine-preventable diseases. To combat the rising number of deaths attributed to these diseases, expanded program of immunization was launched by WHO in 1974 that covered six diseases polio, diphtheria, tuberculosis, Pertussis, measles and tetanus. (http://www.unicef.org/immunization/index_coverage.html). In Pakistan EPI was launched in 1978 and covered the six diseases later on three more diseases were added hepatitis, pneumonia and Hib. The global target is to vaccinate 95% of the total infants. If EPI is withdrawn in Pakistan, 1000 children under 5 years of age will die daily. Another significant performance indicator is timely administration of vaccines. Based on guidelines, the schedule followed in Pakistan BCG & OPV0 is given soon after birth followed by Pentavalent and pneumococcal at 6, 10, 14 weeks and Measles at 9 & 15 months with coverage exceeding 95%. BCG prevents 80% of the total children in the world against childhood Tuberculosis. The BCG vaccination is a highly cost-effective intervention against Mililiary TB & TB Meningitis. The effectiveness of BCG is maximum if given soon after birth. Immunogenicity assessed by cytokine signature in culture supernatants from diluted
blood sample stimulated that Mycobacterium Tuberculosis showed lower production of most cytokines in infants vaccinated within 1st week after birth than those vaccinated later.

A study conducted in Guinea-Bissau revealed that only 50% children were fully immunized by the age of one year & 65% at the age of two. In 2011, more than 50% of children did not receive DPT3 majority were from India (32%). Nigeria (14%) & Indonesia (7%) 7. According to a study in Kampala, Uganda, only 45.6% children received timely vaccination6. In East China, in 2011, timely measles coverage was only 47.5%. According to 3rd party evaluation in Oct-2013, the overall coverage of Pakistan was 56%. Dist. Jhelum being at the top in Punjab could achieve 85%. This was regardless of timely administration, when this factor is of utmost importance.

Numerous studies have implicated multifarious factors including cultural issues, deficit of supervision of health workers and inappropriate program planning and monitoring (14, 16) 14.

Other factors that play a pivotal role include dismal immunization services and religious aspects (17, 18) Studies to assess the timeliness of vaccines have been conducted in other parts of the world yet no appreciable data is available from Pakistan. Therefore we assessed the factors responsible for the non-compliance of the timely administration of vaccines with emphasis on BCG vaccines.

MATERIAL & METHODS
This cross sectional study was conducted in District Jhelum from June 2014 to November 2014 for time duration of 6 months. Parents of children of less than two years of age were taken as the target population. A total of 450 children were selected through probability cluster sampling technique. Sample size was calculated by using the formula

\[
\text{Sample Size} = \frac{\text{Population size}}{\text{Hypothesized %}} \times \left(1 + \frac{\text{Confidence limits}}{100}\right) \times (\text{fpc})^2 \times (N-1) + p^2 \times (1-p)
\]

The sample size was inflated to 450 to accommodate non response and incomplete questionnaires.

Out of 54 Union Councils (UC), 9 UCs were selected randomly with a cluster of 50 in each. All parents having children less than two years old and who were permanent residents of District Jhelum were included. Those non-responsive/ absent at the time of the data collection were excluded.

The data collection team comprised of two people- one male and one female, who were trained in data collection. Data was collected by using a self administered questionnaire formulated for quantitative analysis. Proforma based interview was conducted and questionnaire was developed in both English and Urdu. Data was then entered in MS Excel. In lieu of errors data was cleaned prior to analysis. P value of 0.05 was taken as significant. For descriptive statistics frequency and percentages were calculated as entire data was categorical.

For qualitative analysis, a separate questionnaire was used for interviewing the key persons of district Jhelum in EPI and their suggestions and recommendations finalized for the corrective measures.

RESULTS
Out of 450 children under 2 years, 164, i.e. 36.4 %, were vaccinated with BCG during the first seven days after their birth, while 151 i.e. 33.6 % were given the BCG vaccination between the first seven to fifteen days of their birth. 97, i.e. 21.6 %, were vaccinated with this between the ages of 15 days to 29 days. While 38, i.e. 8.4 % were vaccinated after one month. This shows that only 36.4 % were vaccinated during the first 7 days, while the remaining bulk (i.e. 63.6 %) was vaccinated after the first week of their life demonstrating the significant delay in the administration of the vaccine.

When parents' knowledge was assessed regarding expanded program of immunization, majority 86.4% (n=389) were aware of it. Regarding the EPI schedule 59% (n=265) were aware of it and another 41% (n=185) had no knowledge regarding the schedule of the EPI program. While assessing the knowledge about the diseases covered under the EPI programme, 67% (n=302) replied in assent, while 33% (n=148) displayed lack of knowledge. When inquired about the required age for the first vaccination according to the EPI schedule, 62% (n=279) replied correctly by saying 'at birth'. Whereas for age of last vaccination, 57% (n=255) replied correctly.

When factors related to non compliance were assessed, working status of the mothers showed mixed results as out of the total housewives 35.8% (n=149) had their child vaccinated with BCG within first 7 days of birth as compared to 44% (n=15) working woman.
In the case of the respective household incomes, those with monthly income less than Rs. 20,000, 103 out of 314 (32.8%) had their child vaccinated during the first 7 days, while those earning between Rs. 20,000-50,000 per month, 48/108 (44.4%) had their child vaccinated within first week, whereas those with wages greater than 50,000 rupees per month, 46.4 % had their child vaccinated within the first week. (P value 0.036). 59.5 % (n=25) of fathers with an educational status of graduation had their child vaccinated within the first week. (P value 0.031). Similar results were seen when educational status of mother was assessed, 60% of the graduate mothers had their child vaccinated in the first week (P value 0.000).

When practice versus knowledge was assessed, 52.4% (n=148) of the people aware of the EPI schedule underwent vaccination of their child within the first week (P value 0.017).

Considering the place of delivery, 26.7% (n=16) of the children delivered at home were vaccinated within the first week, while those delivered at government hospitals, 34 % (n=71) had vaccination within the first week. Deliveries 42.5% (n=77) that took place in private hospitals 47 % of those delivered at private hospitals underwent vaccination within the first week. (P value 0.006).

When place of vaccination was associated with timeliness, out of the total vaccinated at home 11 % (n=18) were vaccinated within the first week, those vaccinated at a health facility, 42.1 (n=96) % were vaccinated timely and 47 % (n=77) of those seeking outreach program were vaccinated within the first week. (P value 0.000).

Antenatal visits of mothers came out to be another important factor for non compliance for timely vaccination. When antenatal visits by mothers was less than or equal to 2, only 1.2 % (n=2) had their child timely vaccinated within the first week. However, 98.8 % (n=162) mothers with more than 2 antenatal visits had their child vaccinated within the first week. (P value 0.000).

When visits by the vaccinator was taken into account for finding association with timeliness, only 20.5% (n=8) children were vaccinated on time where vaccinator visits were irregular as compared to 38% (n=156) children who were vaccinated on time where the visits were every month. (P value 0.001)

Table 1: Knowledge of participants regarding EPI Program

<table>
<thead>
<tr>
<th>Are you aware of the Expanded Program of Immunization (EPI)?</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>61</td>
<td>13.6</td>
</tr>
<tr>
<td>Yes</td>
<td>389</td>
<td>86.4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Are you aware of the Schedule of Expanded Program of Immunization?</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>185</td>
<td>41.1</td>
</tr>
<tr>
<td>Yes</td>
<td>265</td>
<td>58.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Do you know the diseases which are covered under the EPI Program?</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>148</td>
<td>32.9</td>
</tr>
<tr>
<td>Yes</td>
<td>302</td>
<td>67.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>At what age should the first vaccination be given?</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>At Birth</td>
<td>279</td>
<td>62.0</td>
</tr>
<tr>
<td>7 days</td>
<td>85</td>
<td>18.9</td>
</tr>
<tr>
<td>15 days</td>
<td>69</td>
<td>15.3</td>
</tr>
<tr>
<td>1 month</td>
<td>16</td>
<td>3.6</td>
</tr>
<tr>
<td>After 1 month</td>
<td>1</td>
<td>.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>At what age is the last vaccination given?</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 months</td>
<td>82</td>
<td>18.2</td>
</tr>
<tr>
<td>15 months</td>
<td>255</td>
<td>56.7</td>
</tr>
<tr>
<td>18 months</td>
<td>85</td>
<td>18.9</td>
</tr>
<tr>
<td>24 months</td>
<td>28</td>
<td>6.2</td>
</tr>
</tbody>
</table>

Graph 1: Age of child at BCG Vaccination

![Graph 1: Age of child at BCG Vaccination](image)
Table 2: Association of age at BCG vaccination with different factors

<table>
<thead>
<tr>
<th>Working Status of Mother</th>
<th>At Birth</th>
<th>7 days</th>
<th>15 days</th>
<th>1 month</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Household Income &lt;2000 Rs</td>
<td>100.00</td>
<td>98.8</td>
<td>96.2</td>
<td>93.4</td>
<td>0.036</td>
</tr>
<tr>
<td>2000 Rs - 5000 Rs</td>
<td>99.00</td>
<td>97.8</td>
<td>95.6</td>
<td>92.4</td>
<td>0.012</td>
</tr>
<tr>
<td>Household Income &gt;5000 Rs</td>
<td>98.00</td>
<td>97.0</td>
<td>95.0</td>
<td>92.0</td>
<td>0.038</td>
</tr>
</tbody>
</table>

DISCUSSION

The Expanded Programme on Immunization (EPI) is a disease prevention activity aiming at reducing illness, disability and mortality from childhood diseases preventable by immunization. It is a global programme carried out in all countries helped by WHO, UNICEF and further donor agencies.

Basically, it includes 9 target diseases: poliomyelitis, neonatal tetanus, measles, diphtheria, pertussis (whooping cough), hepatitis-B, Hib Pneumonia & meningitis, and childhood tuberculosis, as well as pneumococcal pneumonia; these cause numerous illnesses, disabilities and deaths every year-

27% of deaths in < 5 years age-group are because of vaccine-preventable diseases e.g. 80% of total children globally are being protected against TB. EPI-discontinuation can cause 1000 deaths in those less than 5 years old on daily basis. Immunization is most operational and cost effective in eradicating smallpox, lowering worldwide-poli incidence till now by 99% and has gained a vivid reduction in the effects of some targeted diseases. Keeping in mind this goal, the plan began, and continues since 1978 in Pakistan; evaluation is carried out at 2-3 year intervals. Its specific objectives are 95% immunisation coverage, eradicating neonatal tetanus and reducing VPDs morbidity and deaths by 2/3rd by 2015 according to MDG-4, 2000, confirming eradication of poliomyelitis after existing free of it for 3 years and introducing new vaccines in the EPI schedule of pneumococcal in 2011.1

Our study aimed to assess timeliness. To assess the present situation, especially timely vaccination with BCG, this study was conducted in Jhelum. This vaccine has unswervingly proved to be very effective against meningitis, Milliary and childhood tuberculosis, but its efficacy against pulmonary tuberculosis and other mycobacterial diseases is variable.

The overall coverage of vaccination in children at risk was 72.6% (95% confidence interval (CI): 66.3 - 78.0). In Île-de-France, this coverage was 89.8% (95% CI: 81.4 - 94.7), whereas outside this the coverage was (95% CI: 81.4 - 94.7). Children had higher vaccination coverage when aged 13 to 23 months than those with ages from 2 to 12 months, though this difference was merely statistically important outside it, as its p value was less than 0.012.

As is the case in our study, though all 450 children were vaccinated with BCG, only 164/450 i.e. 36.4% were vaccinated within the first week of their birth.

Another significant concern is whether insufficient coverage of vaccination affects TB-incidence, e.g. the vaccinated have a low incidence (as is evident from a universal BCG-vaccine discontinuation in Sweden when coverage was low and TB incidence in foreign-origin children increased fifteen-fold.) thereby proving that proper vaccination corresponds to low TB incidence.2

According to a study conducted in Ghana, when most mothers attended antenatal clinics during pregnancy, maximum (98.8) delivered in hospitals, 85% babies less than 12 months of age and mean distance to arrive at clinics was 30 minutes, the uptake of initial vaccines was generally timely at 87.3% while the late-given vaccines were to 5.3% of these (administered after time) 3.

Timeliness of this vaccination is possible, shown through a study in Kampala Uganda, using methods bent upon improving it specifically among the poorest, single and multiparous women plus within mothers not delivering at health facilities.8

This is very much parallel to our study which proved that mothers making more than 2 antenatal visits had a very high, 98.8%, proportion of children vaccinated suitably in accordance with time. Similarly, the higher proportion of timely vaccinated children was of those delivered at hospital facilities.

A study in rural Guinea-Bissau, coverage within 12 months was not high, but beyond this age increased. More than half of all children underwent vaccination out of sequence, thus highlighting the need for improved vaccination.6
In another community-based cross-sectional study in Kampala, Uganda, 45.6% of 821 children received all vaccines during the recommended time ranges (45.6%; 95% CI 39.8-51.2), this being lowest for measles (67.5%; 95% CI 60.5-73.8) and highest for the BCG vaccine (92.7%; 95% CI 88.1-95.6). 8

Our study shows that from those children vaccinated in their first week, 95.1% belonged to the vaccinators visiting regularly and 4.9% were included in the area where the vaccinator was irregular.

Thus, improved communication for EPI, as well as the effective implementation of programmed outreach session health facilities are needed to ensure timely vaccine administration. 10

According to a Cameroonian health district in the period of Feb. to May 2009, it has been revealed that merely 62% of the immunization sessions were executed properly since transport funds and staffs was limited. 11

So, further considerable factors include the accessibility of the to-be-vaccinated populations. Vaccination rates can be enhanced through better service delivery, vaccines availability, increased involvement of nomadic/rural communities and separate outreach services for the remote areas, e.g., in Tanzania. 12

Interventions based on communities can improve rates through raising community demand for immunisation based on e.g. education and patient reminders; increasing provider opportunities; better access to immunisation services and executing all of them together. Manual outreach, tracking and home visits are expensive and require more labour, but can be effective than standard strategies in rural and far-off populations. 14

In the expansion of immunisation in Chinese children, considerable advancement has occurred, but discrepancies across different provinces are present owing to information gaps between the supply and demands in rural areas. However, quick developments in mHealth, the mobile health technology, provide exceptional opportunities in improving this situation. 13

A Government mediation plan that did consist of recruited village-based community volunteers increased the DPT vaccination in India age-appropriately- a part of a health-sector reform centred at increasing timely vaccination through decentralizing the administration. 17

When immunogenicity was examined in Malawi through cytokine signature in culture and then supernatants from the diluted whole blood samples stimulated with M. tuberculosis PPD (using a multiplex bead assay) infants vaccinated within the first week of their lives showed lesser cytokine-production than those vaccinated later5 -signifying the importance of the time of vaccine delivery.

Delayed immunisation is primarily due to staff and vaccine-supplies shortages and disobedience of plans. 17 Deliberately delayed vaccines are quite occurring and therefore children, whose parents practice this, may be at a raised risk of being missed out from recommended vaccine doses by the age of 19 months and are even more susceptible to vaccines -preventable-diseases. Vaccine suppliers need to develop educational strategies addressing concerns of the parents regarding the safety and effectiveness of vaccines, helping encouraging timely vaccination. 18

Our study brings into limelight that a kind of the educational strategies, i.e. EPI-awareness, 90.2% mothers had their children vaccinated timely.

CONCLUSION

This study concludes that there is a significant delay in administrating the BCG vaccine timely in children even though parents are mostly aware of the EPI schedule. Increase in the respective household incomes does result in a corresponding increase in vaccination. Further to this, when the parents, specifically mothers, are educationally qualified- at the very least, graduated- vaccination coverage is comparatively extensive. Vaccination rates are, also, high when most deliveries are in hospitals and through the data it is evident that our primary focuses is on outreach, door-to-door vaccination as when vaccinators are regular the rates are very high-almost all children are vaccinated (even if not timely) though other practices at hospitals are not very uncommon. Mothers are also very much likely to get their children vaccinated within the recommended limited time if they make more than two antenatal visits. The qualitative part as well concludes that the use of 20-dose BCG vial, the lack of sufficient resources and the overall lenient monitoring are important factors contributing to the delay in vaccine administration. So aside from all factors pointing to the above mentioned effects on timely vaccination, the single dose vile should substitute the existing, the resources increased and the monitoring made stricter to alleviate the concerns regarding the delay in vaccine-administration.

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ASSESSMENT OF COMPLETENESS AND TIMELINESS OF DISTRICT HEALTH INFORMATION SYSTEM AT FIRST LEVEL CARE FACILITIES IN A RURAL DISTRICT OF SINDH, PAKISTAN.

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Abstract

Background/Objective: A well-designed district health information system (DHIS) is an important tool for the management of primary health care services at gross root level. Complete, timely and correct information is needed to every health manager for making better decisions based on evidence. Rapid assessment is required for improving the quality of data that helps in planning, strengthening and restructuring of the system. In Pakistan, facility based DHIS was developed in the year 2008. This system has been implemented in phased manner and since June 2010, over 90% primary health care facilities are working under reporting system of DHIS. This study was conducted to assess completeness and timeliness of DHIS at first level care facilities (FLCF) of a rural district in Sindh, Pakistan.

Methods: A mix method study was conducted to assess the 10 FCLFs randomly selected out of 47 located in district Ghotki. Project was completed from April to July, 2013. All health workers were interviewed through a pre designed checklist. However, in-charges of the facilities were interviewed through qualitative approach, after taking the informed consent. Data has been analyzed through both; qualitative and quantitative methods.

Results: A total of 10 FCLFs were assessed to meet the objectives of study. Data completeness and timeliness were assessed through this survey. Lack of supervision, lack of coordination, political interference, timely feedback and shortage of human resource were identified as major themes after qualitative data analysis. The participants of the study were mostly medical officers and other staff responsible for DHIS activities at the facility. Findings of this study show poor situation of DHIS in terms of data quality with reporting regularity of less than 65%.

Conclusion: This study concludes that factors like lack of coordination, human resources, supervision, feedback and political interference are main causes for incompleteness and timeless flow of DHIS at FCLF of rural Sindh.

Key Words: Health Management Information System, First care level facility, District, Data, Human Resource, Health System.

INTRODUCTION:
The health sector reforms to improve the efficiency, equity and effectiveness of health system have been implemented in many countries of the world. In the recent past, Pakistan has undergone major constitutional change (18th amendment) devolving seventeen ministries including ministry of health with a view to increase the performance of health system. Such restructuring has taken a movement in the developing world since the adaptation of primary health care (1). Health information management systems (HIMS) have potential to improve decision-making processes in the health care systems by providing information as a basis for decision-making. In order to realize its potential, the information systems should provide quality data for decision making. However, coverage and quality of data have been variable. Health service delivery requires the availability and effective use of quality data for decision-making in the planning, monitoring and evaluation of services delivered by the national health care system. HIMS data should be complete, accurate, consistent and timely (2). Evidence
based decision making process requires that quality of data becomes a critical factor in the health delivery system. However, one of the primary obstacles in implementing quality health care delivery especially in developing countries is the lack of appropriate information for effective decision-making. Poor data quality in decision-making can have far reaching social and economic consequences including impact on customer/user satisfaction, operational costs, effectiveness of decision making and the ability to make and execute the strategy(3). The development of comprehensive HIMS is increasingly becoming important for measuring and improving the quality and coverage of health services. Decentralization of health services has been one of the important health sector reforms that are being implemented mostly within the wider programmes of public sector reforms. In this regard, developing countries have made efforts to strengthen their national health information systems/ DHIS.

Data quality issues have been at the heart of many practitioners and researchers for a long period. Since quality has many dimensions, discussions on the definition of data quality issues have been approached from various perspectives. Different techniques for assessing quality of information have been discussed (4). Some of the approaches have concentrated on the conceptual aspects focusing on the design and operation of information systems (5). Many contributing factors have caused these errors including incorrectly entered data (22%), physician-diagnosis error (13%) and missing encounter forms (8%). These inaccuracies are not only costly to health systems but also affect the quality of health care provision. Although inaccuracies in administrative data are common but they can easily be rectified (6). In addition, poor data quality can result in lowered morale and organizational mistrust. In recent years, countries are demanding quality information upon which to build decision-making processes. Such information provides the essential foundation of public health actions. This calls for building strong country health information systems to meet the information needed for all stakeholders. In having confidence in the decisions starts with having data that can be trusted and to have confidence in the data is largely due to its quality. Data quality problem is a major barrier to the usability of data. To improve the trustworthiness of the data that becomes basis for the decisions is challenging. To explore this issue in our local set ups, this study was undertaken in a rural district of Sindh.

METHODOLOGY:
This mixed methods study was conducted in district Ghotki of Sindh, Pakistan through April to July, 2013. Data was collected after its approval from Institutional Review Board of Health Services Academy, Islamabad, since it was a study project. A total of 10 FLCFs were selected randomly out of 47 in the district and healthcare workers/ data entry operators as well as officer's in-charge of these facilities working in these settings were approached for interview on adopted, pretested, validated and reliable tool after taking the written consent. Data collection tool contained check list for assessing the completeness and timeliness of preventive and curative indicators at FLCFs. Those workers having debilitating illness, T.B., Asthma, mental disability etc. were excluded. Healthcare workers were identified and approached through administration of the concerned FLCF. Data was analyzed by using SPSS version 17.0. Univariate analysis was done using "chi square" test for all the categorical variables.

RESULTS:
Out of 10 FCLFs studied, most of them were functional and instruments were available at facilities while their completeness and timeliness was less than 60% (Figure I). Availability of central registration point register was 100% but its completeness was only 70% and timeliness was 60%. Regarding the OPD slips available at all the levels, their completeness was 50% and timeliness 60%. It was observed that the records of laboratory registers, outpatient record and medicine requisition were very poor.

Figure 1: Availability, completeness and timeliness of DHIS tools at the FLCFs

Surprisingly, it was observed that only 20% of facilities have user manuals for DHIS, while the 30% of them have the health database report form and only 40% of facilities have training manuals for DHIS. It was noted that all the facilities had PHC facility report form and 80% of stock registers were available. Majority of the medical officers (80%) were found filling the OPD registers and monthly reports, while 70% of lady health visitors were performing Maternal, Child Health, Family Planning and growth monitoring related DHIS activities. The dispensers were involved with abstract and stock registers.

Qualitative findings were analyzed by making the nodes, sub-nodes and finally themes were generated as follows:
Lack of supervision
Most of the respondents emphasized the vital role of district health office in improving the quality of information system by providing integrated supervision as an effective way of ensuring quality of data. One of the in-charges explained as under:
"Role of district office is very important in many ways, it not only gives us motivation but considerable supervision can result in improvement of health system".

Timely feedback
Most of the respondents perceived feedback system as a sign of motivation and also considered it important for necessary management to produce positive results and making decisions based on evidences available for the improvement of health care delivery services. One of the in-charges of FCLF explained:
"We rarely get feedback from district health office for the reports we send, it affects our morale for work and results in poor quality of data considering it as just a formality to be filled".

Lack of coordination
Lack of coordination among health workers at health facility level and from the district office contributes to poor data quality. Respondents mentioned the lack of coordination as factor for the poor results at facility and district level. In-charges of the facility agreed:
"We are not being coordinated for many activities at any level".

Lack of Human Resource
Study participants identified the lack of human resources at the facilities as one of the causes of low quality of data. One of the in-charges said:
"We are not given enough staff to carry out formal activities, for example, I am medical officer here and do not have store keeper who could manage the record of medicines and other equipments".

Political Influences
A few of participants also reported the political influences as major cause in absenteeism of staff which results in improper data and poor functioning of the facilities. One of FCLF in-charges shared his experience:
"Staff having political support are masters here and mostly absent from duties".

Lack of accountability
The Interviewer also identified that lack of accountability of staff absent from duties was one of the leading factor for mismanagement at facility level and resulting in poor data quality. One in-charge was concerned and said:
"District health office has never taken any action against the staff who were identified reluctant in performing their duties".

DISCUSSION:
In this study, the criteria used for assessing data quality were completeness and timeliness, has been explored. Quality of data means correct and meaningful data, which can be utilized for managerial, policy and planning issues or any other purpose it is intended for. Reliable and timely health information is an essential foundation of public health action and health systems strengthening, both nationally and internationally (7). The quality of data depends not only on attitudes of health workers but also on having necessary skills for doing things. Improvements to health information systems also require attention to be given to the training, deployment, remuneration and career development of human resources at all levels (8). This has a number of implications at all levels. The incompleteness of data raises doubts on the validity and reliability of the data and its utilization in the management of health services. Vital statistics are a key input for policy-making and planning in human development (9). Secondly, the incompleteness of data will result in late report compilation and submission to the next level and thereby rendering the data not to be used by different users. Data must be intuitive and obvious to health information system actors (10). It can be observed from this study that more than half of the selected health facilities do not have complete data. The study at district Ghotki has revealed that DHIS data quality is low. This assessment has also shown that at district level the reporting rate is also low.

Accurate data is vital to the effective management of any health system. As noted elsewhere, information is important because it, among other things ensures the timely provision of effective services that in turn improve the healthcare consumer satisfaction and for making informed decisions. One of the main purposes of individual records is to help care providers to deliver health services to individuals in a facility, or through outreach activities in the community (11). In terms of accuracy of the data by using checklist the study found a lot of incorrectness in recording diagnoses and disease code. In some cases, health workers did not follow the instructions of filling registers and in some cases; they did not fill the complete columns available in the registers. These disparities in quality as noted above have variable impacts ranging from the quality of care provided, timely delivery of services to the clients to planning and organizational issues. Incompleteness and inaccuracy of data contribute to delay in preparing timely reports. These result in late reporting from health facilities. Reliable and timely health information is an essential foundation of public health action and health systems strengthening, both nationally and
internationally. New and advanced technologies must be adopted to ensure reliable quality of data supported by training and development of the human resource. Emerging technologies can help countries to dramatically increase their storage and performance capacities and accelerate the processing timeframes previously required (12-14).

This study explored in-depth through qualitative interviews and found that some of facilities were properly implementing the system with enthusiasm while other facilities shown lack of interest and commitment. In interviews, factors identified that the health workers do not use data in decision-making including attitudes, lack of teamwork, lack of interest and seriousness on the part of some health workers. Coordinating data producing agencies, sharing data and disseminating statistics all depends upon the legal and institutional environment (1). In some cases, the health workers consider DHIS an extra workload as it asks them to fill the registers and perform analysis, which they did before. High attrition results in understaffing in the health facilities and this may contribute to extra work for the staff. Health workers are overburdened by excessive data and reporting demands from multiple and poorly coordinated subsystems. Supportive supervision and feedback are essential in improving data quality. All major stakeholders should participate in assessing and planning health information system strengthening. These are some motivating factors in successful implementation of health information system which can also be adopted in our system.

CONCLUSION:
This study concludes that there is a poor picture of DHIS in district Ghotki with regard to completeness and timeliness. Main factors responsible for this situation include weak supervision, lack of refresher trainings, poor feedback mechanisms as well as poor use of information collected. Therefore, the current DHIS at FLCFs need to be improved in terms of completeness and timeliness to ensure good quality of data for evidence based decision making for health managers at district level. This study proposes to improve the data quality of routine health services through innovative interventions that are cost-effective.

REFERENCES:
13. 60th World Health Assembly, Resolution 60.27 Strengthening of health information systems. Available at http://www.who.int/gb/ebwha/pdf_files/WHA60/A60_R27-en.pdf
Introduction: Hospitals are place of interaction between physicians and patients. Both patients and doctors rely on pharmacy services because pharmacy has to provide the prescribed medicines and proper guidance about their usage. Patient satisfaction towards pharmacy services is an understudied subject in Pakistan. Due to inappropriate measures and planning, quality in provision of pharmacy services is often compromised. This study aimed to assess the disparities and problems in acquisition of superlative pharmacy services, thus effecting the patient's satisfaction.

Methodology: A cross sectional study was conducted at DHQ Hospital ziarat, Balochistan. The study participants were selected through convenient sampling method and were 290. The data was collected and analyzed through SPSS. Likert scale and Kruskal-Wallis H test was used to determine differences between two or more groups of an independent variable on a continuous or ordinal dependent variable.

Results: The quality of pharmacy services provided by hospital pharmacy was not satisfactory. About half of the respondents were not satisfied with the proper guidance regarding pharmacy location. About two third (64.1%) respondents disagree with good maintenance and proper availability of required medicine in pharmacy. More than half of respondents were not satisfied about knowledge of pharmacy technician, information given regarding medicine usage and adequate availability of pharmacy staff. Pharmacy technicians did not provide any information regarding change of medication. In case of unavailability of medicine in the pharmacy technicians should provide proper guidance about main store or other nearby pharmacy from where patients can get prescribed medication. Pharmacy staff has good communication skills according 53.8% study respondents. About 46.2% respondents disagree that pharmacy staff provided guidance about proper storage of medicine. According to 53.8% participants, waiting time for medicine is not acceptable. A statistically significant difference among the number of respondents with context to their response was found. (p=0.000)

Conclusion: Provision of satisfactory pharmacy services should be the main objective of any hospital pharmacy but services provided at pharmacy, DHQ hospital, Ziarat, Balochistan were not satisfactory according to current study findings. This study finding following factors i.e. adequate pharmacy staff, Proper availability of the medicines, trained pharmacy technicians, proper guidance of the patients regarding usage, storage and dispensing of the medicines are very poor at hospital pharmacy.

Key words: Pharmacy services, Medication, Dispensing, Hospital Pharmacy
According to WHO guidelines the hospital pharmacies should comply following standards to main the better health care facility; [3]

- Regular access to the essential drugs must be ensured by the hospital pharmacies.
- Adequate therapeutic doses of medicines should be available in hospital related pharmacies.
- Right treatment of illness of the patient must be ensured and fulfill with the pharmacist’s recommendation for administration.
- Pharmaceutical services are also essential with drug therapy of patients.

To implement all above described standards cannot be done only by pharmacies but with the support and collaboration of other professionals related to health care in hospital organization. All these dedications result in making the drug an integral part of patients care.

The different departments in a health care facility center their services towards betterment of the patient’s illness. The suitable medicine use in the hospital depends on the effectiveness of the following department professionals: medicines prescribe by the doctor after diagnosis of disease, preparation and provision by the pharmacist as well as dispensing of care services related to pharmaceutical, provision of registered nurses for appropriate dose administration of medicines to patients, ensure the availability of medical laboratory scientist for the confirmation of diagnosis test by testing laboratory, quality assurance and quality control systems to ensure high standards of potency of the drug, and implementation of the policies defined by hospital administration to engage highly qualified and trained professionals and therapeutic team to ensure the rational drug use. [4]

Development of skills for self-management should be done by educating the patients about his/her illness and its suitable cure by professionals related to health care discipline. Pharmacists can provide information to patients to educate them about medication of her/his illness and by demonstrating how and when to use medications. Patients can be helped by pharmacist to understand their disease management plan. In addition to all above, pharmacists can monitor use of medication and refer patients with poor control of disease to physicians for medical care. [5]

Care practices related to pharmaceuticals is projected to meet a requirement in the hospital system that has taken place due to the enhancement in intricacy of therapies by different drugs and the noteworthy level of morbidity related to drug use and mortality in connection with drug use. [6] Therefore, the beginning of pharmaceutical care is essential in developing countries to help in the resolution of problems related to medication of patients against diseases. [6]

Patient satisfaction in health care is important for several reasons satisfied patients are more likely to maintain consistent relationship with specific provider. Patient satisfaction measurement add important information on system performance and thus contributing organization total quality management and lead to the loss of income from the patient as well as wastage of government resources. Patient satisfaction is personal feeling of pleasure or dissatisfaction resulting from services provided performance out come in relation to his or her expectations. [7]

Ziarat is located in Balochistan province of Pakistan. It was declared as District in July, 1986 and it has a population of 52,855. It is subdivided into two tehsils Ziarat and Sinjavi and 10 Union Councils. It is located at 30°22'47N 67°43'38E with an altitude of 2,543 metres (8346 feet) and is a famous holiday resort of Balochistan. It is 8,850 ft. above the sea, and is about 125 km far from Quetta.

This study was conduct to assess the various pharmacies in hospitals and compared with WHO standards implementations in Quetta provincial head quarter of Baluchistan Pakistan.

**Methodology**

A cross sectional survey was conducted in DHQ hospital Ziarat, which is the capital of A cross sectional study was conducted at DHQ Hospital Ziarat, to find whether the patients were satisfied with outpatient pharmacy services and to what extent are they satisfied. Estimated sample size was 290 calculated by Epi Info on the basis of prevalence of patient satisfaction by using formula as:

\[ n = \frac{Z^2}{2 \times p \times q} / e^2 \]

The population of interest was all the patients who visited and using outpatient pharmacy facilities DHQ Hospital, while indoor patent were excluded. A questionnaire has been developed for data collection. Data was entered in SPSS and descriptive and inferential data analysis was performed. Likert scale was used with 3-Agree, 2-Neutral and 1-Disagree. Kruskal-Wallis H test is a rank-based nonparametric test that was used to determine if there are statistically significant differences between two or more groups of an independent variable on a continuous or ordinal dependent variable. Approval from internal review board of Health Services Academy and permission from the management of the DHQ Hospital was taken for data collection. Study participants were informed about the purpose of the study and assured for confidentiality even after the completion of study.

**Results**

**Socio-Demographic Factors**

Maximum respondents were male 187 (64.5%) and female ratio was 35.5% and most frequent interview age group was 20-29 years (67.9%). 181 pariticeptnt were...
single while married participants were 37.6%. Among study population maximum number of participant 188 (64.8%) were labors, 67 (23.1%) were private employed and 23 were self-employed, only 12 were of government employee. Among the study population 46.6% were those who visited DHQH second time while 37.9% were visited more than three time. Regarding distance from the hospital, 38.3% respondents were 10-15 km away from the hospital while 7.6% have <1km distance from the health care facility.

Table 1 Socio-demographic characteristics of the respondents (n=290)

<table>
<thead>
<tr>
<th>Socio-Demographic Factors</th>
<th>n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>187 (64.5%)</td>
</tr>
<tr>
<td>Female</td>
<td>103 (35.5%)</td>
</tr>
<tr>
<td>Age (Years)</td>
<td></td>
</tr>
<tr>
<td>20-29</td>
<td>197 (67.9%)</td>
</tr>
<tr>
<td>30-39</td>
<td>40 (13.8%)</td>
</tr>
<tr>
<td>40 &amp; Above</td>
<td>53 (18.3%)</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>181 (62.4%)</td>
</tr>
<tr>
<td>Married</td>
<td>109 (37.6%)</td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
</tr>
<tr>
<td>Govt. Employ</td>
<td>12 (4.1%)</td>
</tr>
<tr>
<td>Pvt. Employ</td>
<td>67 (23.1%)</td>
</tr>
<tr>
<td>Self-Employ</td>
<td>23 (7.9%)</td>
</tr>
<tr>
<td>Labor</td>
<td>168 (44.8%)</td>
</tr>
<tr>
<td>Other</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Visit of Hospital</td>
<td></td>
</tr>
<tr>
<td>First time</td>
<td>15.5%</td>
</tr>
<tr>
<td>Second time</td>
<td>46.6%</td>
</tr>
<tr>
<td>3-5 time</td>
<td>37.9%</td>
</tr>
<tr>
<td>Distance from Hospital</td>
<td></td>
</tr>
<tr>
<td>&lt; 1 km</td>
<td>7.6%</td>
</tr>
<tr>
<td>1-4 km</td>
<td>23%</td>
</tr>
<tr>
<td>5-10 km</td>
<td>23%</td>
</tr>
<tr>
<td>11-15km</td>
<td>38%</td>
</tr>
<tr>
<td>&gt; 15 km</td>
<td>8%</td>
</tr>
</tbody>
</table>

Pharmacy care services: General impression of the respondents about pharmacy: The quality of pharmacy services provided by hospital pharmacy, DHQH, Ziarat was not satisfactory. 66.2% respondents were disagreeing with general impression of the pharmacy while 24.1% respondents were agreeing with this statement and 9.7% remain neutral.

Table 2 shows that there was a statistically significant difference in number of respondents between the different responses Agree, disagree and neutral. (p = 0.000).

Level of proper guidance of pharmacy location: The maximum (46.6%) of the respondents told that they are satisfied with the proper guidance regarding pharmacy location in the hospital while 23.1% were strongly satisfied and 30.3% unsatisfied with this information.

Table 2: Respondents general impression about pharmacy care services (n=290)

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
<th>N</th>
<th>%</th>
<th>Mean Rank</th>
<th>#</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>General impression of the Pharmacy care Services was good</td>
<td>Agree</td>
<td>70</td>
<td>24.1%</td>
<td>255.5</td>
<td>2</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>Disagree</td>
<td>192</td>
<td>66.2%</td>
<td>96.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Neutral</td>
<td>28</td>
<td>9.7%</td>
<td>206.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proper guidance of Pharmacy in Hospital</td>
<td>Strongly satisfied</td>
<td>67</td>
<td>23.1%</td>
<td>257.0</td>
<td>2</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>satisfied</td>
<td>135</td>
<td>46.6%</td>
<td>150.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dissatisfied</td>
<td>88</td>
<td>30.3%</td>
<td>44.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Required Medicine were available</td>
<td>Agree</td>
<td>86</td>
<td>30</td>
<td>241.5</td>
<td>2</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>Disagree</td>
<td>186</td>
<td>66</td>
<td>93.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Neutral</td>
<td>6</td>
<td>2</td>
<td>189.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many prescribed medicine you got</td>
<td>All</td>
<td>192</td>
<td>66.2%</td>
<td>258.5</td>
<td>2</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>Partially</td>
<td>174</td>
<td>60</td>
<td>56.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>None</td>
<td>44</td>
<td>15.2%</td>
<td>205.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adequate Staff available in Pharmacy</td>
<td>Agree</td>
<td>80</td>
<td>28</td>
<td>243.2</td>
<td>2</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>Disagree</td>
<td>112</td>
<td>38</td>
<td>57.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Neutral</td>
<td>98</td>
<td>34</td>
<td>155.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pharmacy Technicians</td>
<td>Agree</td>
<td>68</td>
<td>23</td>
<td>258.5</td>
<td>2</td>
<td>0.000</td>
</tr>
<tr>
<td>Answer your questions clearly</td>
<td>Disagree</td>
<td>150</td>
<td>51</td>
<td>78.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Neutral</td>
<td>66</td>
<td>23</td>
<td>189.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pharmacy technician Explain how to use medicine</td>
<td>Agree</td>
<td>81</td>
<td>28</td>
<td>250.0</td>
<td>2</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>Disagree</td>
<td>155</td>
<td>53</td>
<td>94.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Neutral</td>
<td>69</td>
<td>23</td>
<td>189.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technician provided guidance when medicine change and why</td>
<td>Agree</td>
<td>46</td>
<td>16</td>
<td>268.0</td>
<td>2</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>Disagree</td>
<td>134</td>
<td>46</td>
<td>67.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Neutral</td>
<td>111</td>
<td>38</td>
<td>190.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staff Guided Property to main store in case of unavailability of medicine</td>
<td>Agree</td>
<td>76</td>
<td>26</td>
<td>251.5</td>
<td>2</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>Disagree</td>
<td>85</td>
<td>30</td>
<td>43.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Neutral</td>
<td>62</td>
<td>21</td>
<td>183.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good Communication skills of pharmacy staff</td>
<td>Agree</td>
<td>156</td>
<td>53</td>
<td>269.1</td>
<td>2</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>Disagree</td>
<td>90</td>
<td>31</td>
<td>63.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Neutral</td>
<td>44</td>
<td>15.2</td>
<td>191.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pharmacy Technician asked about previous medication</td>
<td>Agree</td>
<td>44</td>
<td>15.2</td>
<td>267.5</td>
<td>2</td>
<td>0.000</td>
</tr>
<tr>
<td>History</td>
<td>Disagree</td>
<td>134</td>
<td>46</td>
<td>67.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Neutral</td>
<td>112</td>
<td>38</td>
<td>190.89</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pharmacy staff Provided information regarding storage of medicine</td>
<td>Agree</td>
<td>89</td>
<td>30</td>
<td>246.0</td>
<td>2</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>Disagree</td>
<td>133</td>
<td>45</td>
<td>67.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Neutral</td>
<td>68</td>
<td>23</td>
<td>166.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waiting time for the medicine acceptance</td>
<td>Agree</td>
<td>112</td>
<td>38.6</td>
<td>234.50</td>
<td>2</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>Disagree</td>
<td>156</td>
<td>53.8</td>
<td>76.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Neutral</td>
<td>22</td>
<td>7.6</td>
<td>167.5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Prescribed medicine availability in Pharmacy: 60% of study population told that they failed to get all prescribed medicines from hospital pharmacy few of them remains unavailable. Only 24.8% study population got all prescribed medicines. 15.2% were those who failed to get any prescribed medicine from pharmacy.

Staff at Pharmacy: Among the total respondents 38.6% remained disagree with the adequate availability of the working staff at pharmacy while 31% were agree and 30% were remain neutral to this statement.

Knowledge of pharmacy technicians: Pharmacy technician’s capacity of work mainly focuses on the awareness and expertise regarding prescription and patient information provision. In current study 53.8% study population was not convinced by the answers got form pharmacy technicians and remained disagree with
single while married participants were 37.6%. Among study population maximum number of participant 188 (64.8%) were labors, 67 (23.1%) were private employed and 23 were self-employed, only 12 were of government employee. Among the study population 46.6% were those who visited DHQH second time while 37.9% were visited more than three time. Regarding distance from the hospital, 38.3% respondents were 10-15 km away from the hospital while 7.6% have <1km distance from the health care facility.

Table 1 Socio-demographic characteristics of the respondents (n=290)

<table>
<thead>
<tr>
<th>Socio-Demographic Factors</th>
<th>n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>187 (64.5%)</td>
</tr>
<tr>
<td>Female</td>
<td>103 (35.5%)</td>
</tr>
<tr>
<td>Age (Years)</td>
<td></td>
</tr>
<tr>
<td>20-29</td>
<td>197 (67.9%)</td>
</tr>
<tr>
<td>30-39</td>
<td>40 (13.8%)</td>
</tr>
<tr>
<td>40 &amp; Above</td>
<td>53 (18.3%)</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>181 (62.4%)</td>
</tr>
<tr>
<td>Married</td>
<td>109 (37.6%)</td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
</tr>
<tr>
<td>Govt. Employ</td>
<td>12 (4.1%)</td>
</tr>
<tr>
<td>Pvt. Employ</td>
<td>67 (23.1%)</td>
</tr>
<tr>
<td>Self-Employ</td>
<td>23 (7.9%)</td>
</tr>
<tr>
<td>Labor</td>
<td>168 (44.8%)</td>
</tr>
<tr>
<td>Other</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Visit of Hospital</td>
<td></td>
</tr>
<tr>
<td>First time</td>
<td>15.5%</td>
</tr>
<tr>
<td>Second time</td>
<td>46.6%</td>
</tr>
<tr>
<td>3-5 time</td>
<td>37.9%</td>
</tr>
<tr>
<td>Distance from Hospital</td>
<td></td>
</tr>
<tr>
<td>&lt; 1 km</td>
<td>7.6%</td>
</tr>
<tr>
<td>1-4 km</td>
<td>23%</td>
</tr>
<tr>
<td>5-10 km</td>
<td>23%</td>
</tr>
<tr>
<td>11-15km</td>
<td>38%</td>
</tr>
<tr>
<td>&gt; 15 km</td>
<td>8%</td>
</tr>
</tbody>
</table>

Pharmacy care services: General impression of the respondents about pharmacy: The quality of pharmacy services provided by hospital pharmacy, DHQH, Ziarat was not satisfactory. 66.2% respondents were disagreeing with good general impression of the pharmacy while 24.1% respondents were agreeing with this statement and 9.7% remain neutral.

Table 2 shows that there was a statistically significant difference in number of respondents between the different responses Agree, disagree and neutral. (p = 0.00)

Level of proper guidance of pharmacy location: The maximum (46.6%) of the respondents told that they are satisfied with the proper guidance regarding pharmacy location in the hospital while 23.1% were strongly satisfied and 30.3% unsatisfied with this information.

Availability of medicine in Pharmacy: Required medicine supplies must be available for patients but in current study among the study population 64.1% respondent remained disagree that the maintenance of the required medicine was poor in DHQH pharmacy while 30% were agree with the statement. The maximum study subjects disagree with the proper availability of medicine in pharmacy and there was a significant difference of number of respondents between Agree, disagree and Neutral. (P=0.00)

Prescribed medicine availability in Pharmacy: 60% of study population told that they failed to get all prescribed medicines from hospital pharmacy few of them remains unavailable. Only 24.8% study population got all prescribed medicines. 15.2% were those who failed to get any prescribed medicine from pharmacy.

Staff at Pharmacy: Among the total respondents 38.6% remained disagree with the adequate availability of the working staff at pharmacy while 31% were agree and 30% were remain neutral to this statement.

Knowledge of pharmacy technicians: Pharmacy technician’s capacity of work mainly focuses on the awareness and expertise regarding prescription and patient information provision. In current study 53.8% study population was not convinced by the answers got from pharmacy technicians and remained disagree with
the good knowledge of pharmacy technicians while 23% agree and same %age were remain neutral. It's showed a significant different of the respondents among agree, disagree and neutral with the statement good knowledge of pharmacy technician.

Guidance about the Usage of prescribed medicine: Pharmacy technician must explain about the usage of medicine and enable the receipt about storage and preparation of powder type medications around 64.8% respondents remained disagree about provision of proper information regarding usage of medicine while 27.9% were agree and 7.6% answered which can't grouped in above groups.

Guidance about change of Medication: Pharmacy technicians did not provided any information regarding change of medication, about 15.5% were agree and 46.2% respondents remained disagree with the statement provision of information about change of medication. 38.3% were remaining neutral about this statement. Showed a significant difference among the number of respondents between agree, disagree and Neutral responses.

Guidance to other pharmacy: In case of unavailability of medicine in the hospital pharmacy technicians should provide proper guidance to the main store or other nearby pharmacy from where a patients can get prescribed information. 29.3% study population failed to get such information while 43.8% people remained neutral. Only 26.9% study population got information regarding another pharmacy.

Communication skills: Pharmacy staff should have good communication skills and must be familiar with the local language, custom and community perception. Among study respondents 53.8% remained agree that the pharmacy staff have good communication skills while 31% disagree with this.

Medication's History: Pharmacy staff must take information of previous history of medication before dispensing the new medication but 46.3% of the study respondents remained disagrees with the statement.

Storage of medicines: Among the total respondents only 30.7% remained agree with the statement that pharmacy staff provided guidance about the proper storage of medicine while 46.2% respondents remained disagree.

Dealing of staff: Hospitals remained overburdened and mostly patients have to wait for medicines. 53.8% study population told that they are waiting time for medicine is not acceptable while 38.6% told that the waiting time is acceptable for them. 7.6% respondents remained neutral to this statement. Here statistically significant difference among the number of respondents with context to their response. (p=0.000)

Discussion
This study described demographic, and pharmacy care services provided at DHQ hospital, Ziarat, Baluchistan Overall the response rate of the respondent was good. Various factors have played to this high response rate i.e. the limited time required to fill the questionnaire, completing questionnaire in the pharmacy, and simple type of closed ended questions.

The pharmacy services provided by hospital pharmacy, DHQ, Ziarat was remained unsatisfactory. 66.2% respondents were disagreeing with good general impression of the pharmacy. Unsatisfactory quality of services contributed various factors. One of the major factors was unavailability of sufficient pharmacy technicians at pharmacy. Majority of the study respondents told that pharmacy staff is limited and they have to wait for their prescribed medicines. Availability of pharmacy staffs is a fundamental requirement. In literature it is found that availability of pharmacists or technicians in hospital settings [15] was better (91%) as compared to our results (38%). Another study in Nigerian reported that 56.5% of study sample reported sufficient availability of the staff at pharmacy [16].

Other factor was proper guidance regarding usage and storage of medicine. Pharmacy technician must explain about the usage of medicine and enable the receipt about storage, and preparation of powder type medications around 64.6% respondents remained unsatisfied with guidance about usage of medicines. Among the total respondents only 30.7% remained satisfied that pharmacy staff provided guidance about the proper storage of medicine. Pharmacy technician's capacity of work mainly focuses on the awareness and expertise regarding prescription and patient information provision. In current study 53.8% study population was not convinced by the answers got form pharmacy technicians and remained disagree with the good knowledge of pharmacy technicians. Another study reported that the main factor was ineffective counseling [17]. Another study found that 56.1% respondents thought working staff at pharmacy remained more concerned with their business rather than proper counseling of the patients. [18], another study provided that the better counseling and guidance linked with the higher satisfaction [19]. In current study Pharmacy technicians did not provided any information regarding change of medication 46.2% respondents remained disagree with the statement provision of information about change of medication.

A study published in Saudi Arabia revealed that, lack of privacy, unavailability of qualified pharmacy staff, lack of trainings of the pharmacy staff remained the factors linked with the poor pharmacy services [20]. It was also reported in this research paper that women remained unsatisfactory regarding proper counseling due to the only male pharmacists.

According to survey, conducted in Pakistan during 2006, Public sector health facilities/ Hospitals

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had exceptionally low availability of medicine especially generic medicines (3.3%). [21] In the current study 60% of study population told that they failed to get all prescribed medicines from hospital pharmacy and only 24.8% study population got all prescribed medicines. Required medicine supplies must be available for patients but in current study among the study population 64.1% respondent remained disagree that the maintenance of the required medicine was good in DHQH pharmacy. Again in case of unavailability of medicine in the hospital pharmacy technicians should provide proper guidance to the main store or other nearby pharmacy from where a patient can get prescribed information but unfortunately 29.3% study population failed to get such information.

Another factor involved in public sector hospitals is overcrowded and mostly Hospitals remained overburdened and mostly patients have to wait for medicines. Pharmacy staff cannot pay proper attention to the patients. They just look into prescription and provide the medicines they don't get past history of medication and don't consider any side effect if reported previously. In current study 53.8% study population told that they are waiting time for medicine is not acceptable while Pharmacy staff must take information of previous history of medication before dispensing the new medication but 46.3% of the study respondents remained disagrees with the statement. Pharmacy technicians did not provide any information regarding change of medication 46.2% respondents remained disagree with the statement provision of information about change of medication. The theory of increasing the pharmacist's role for patient care was first introduced by Helper and Strand, [22] WHO defines pharmaceutical care as "the responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient's quality of life."

A study provided that pharmaceutical care services include services i.e. monitoring, documenting, and counseling regarding drug related problems. It also provided that unsatisfactory services in the public sector hospital pharmacies is due to inexperienced pharmacy staff and ultimately they can't provide proper counseling and they take more time for providing prescribed medicines to the patients. Pharmacy staff must have to help patients regarding management of the medications as well as the behavioral aspects of their regimen. [23]

**Recommendations**

Keeping in view the findings of this research following recommendations came in front:

- There should be a routine training of the hospital pharmacy staff to enhance their proficiency, efficiency and effectiveness
- Adequate Pharmacists should be available in pharmacy to improve access to medication information, counseling and management
- The present findings support to develop a system of collaboration between doctors, pharmacy staff and patients

**References:**


REASONS OF BLOOD TRANSFUSION IN WOMEN DELIVERED THROUGH CESAREAN SECTION IN A TERTIARY CARE HOSPITAL OF PAKISTAN

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Abstract

Background: The Blood Transfusion System in Azad Jammu Kashmir (AJK) is not able to meet the demands of the people and needs strengthening. Availability of blood and blood products is also not equitable across the State. All the facilities lack the donor database. There are total 10 public sector blood banks in AJK and the legal framework is in place since 2003. Cesarean section (CS) is considered a common cause of blood transfusion and many CSs are postponed due to non-availability of blood.

Methods: A facility based descriptive study in tertiary care hospital Rawalakot AJK has been conducted to determine the proportion of women who received red blood cell transfusion, their demographic and obstetric characteristics and experience of blood transfusion while having undergone CS. 887 patients had undergone CS from September 2013 to August 2014.

Results: Out of 887, only 73(8.3%) patients received blood transfusion for various reasons. Twenty five (34.2%) patients had history of CS in the past and 13 (17.8%) patients presented with obstructed labor; 7 (9.6%) with abnormal presentation, 6 with placenta previa, 6 with pre-eclampsia, 2 with post partum hemorrhage and 14 (19.2%) patients with fetal concerns were transfused. In addition 15 in-depth interviews were conducted with 15 patients to understand their perspectives with respect to blood transfusion. The patients were not properly informed of the reasons for transfusion and had poor knowledge about the need for transfusion.

Conclusion: It is concluded from current study that main reason for blood transfusion was previous caesarean section. However, an obstructed labor and fetal concerns have also been reported as causes of blood transfusion. It also shows that patients are not properly prepared by the blood transfusion by the healthcare providers.

Key Words: Blood Transfusion, Caesarean section, Blood loss and hospital Delivery.

INTRODUCTION:

Each year more than 528,000 women worldwide die from complications of pregnancy and childbirth; up to 80% of these maternal deaths are directly due to five complications: hemorrhage, sepsis, eclampsia, ruptured uterus from obstructed labor, and complications of abortion. Delivery of the baby by an abdominal and uterine incision is known as Cesarean Section (CS). Mostly CS sections are done due to fetal or maternal reasons either electively or as an emergency. Peripartal hemorrhage is the major cause of maternal and fetal morbidity and mortality in developing countries. Even in the presence of advancement in the prevention, diagnosis and treatment, massive blood loss during pregnancy and delivery pose a threat and therefore, prevention of maternal mortality needs immediate blood transfusions along with life saving measures to achieve the fifth millennium development goal.

The cesarean section has been considered a common indication for blood transfusion in obstetric practice because it has a risk of massive intra-operative blood loss. This procedure is often postponed due to non-availability of blood. The compensatory mechanism in pregnancy in which blood volume is increased also help in accommodating the obligatory blood loss in delivery either vaginally or through cesarean section. However in some patients, compensatory mechanisms cannot accommodate due to massive blood loss and result in hypovolaemic shock which causes a major threat to both the mother and fetus. Due to increased awareness about the hazards of blood transfusion and developments in the understanding of pathophysiologic mechanism of oxygen transport and tissue oxygenation, the transfusion practices have been changed for the last two
decades.

Over the years, safe administration of blood and blood products has been considered the major issue in blood transfusion. With the advent of HIV/AIDS pandemic, the use of blood in clinical practice has been a point of concern for patients and physicians both. Despite the safety concerns with blood transfusion, the availability of blood for therapy has been deficient and effective utilization is a challenge even the presence of safety concerns. There are many limitations in the use of blood in clinical practice in developing countries. The reasons for this scarcity are not so ambiguous. The demand for blood is increasing due to obstetric and surgical needs as well as an increasing number of motor vehicle accidents. On the other hand, the supply is reducing as a result of poor donor response, anemia, and donor blood wastage due to viral contamination. In addition, the cost implication including man-hour wastage for routine cross-matching could be too much and can further cause stress on an already under-nanced health sector. A rational use of blood may give better outcome, especially in an environment where massive blood loss is a factor in maternal mortality. Therefore it has become necessary to determine the proportion of women who received blood transfusion during C-section so routine cross-matching can be minimized. Determination of the likely factors for blood transfusion during cesarean section may help in targeting specific cross-matching of donor blood, enhance efficient use of this limited resource, and improve its availability in other situations when blood products may be of critical importance. The objective of this study is to determine the proportions of patients received blood transfusion during cesarean section in a tertiary hospital and their demographic and obstetric characteristics.

METHODS:

Facility based cross sectional study with both qualitative and quantitative approach has been conducted by including the 887 pregnant women who had delivered through CS from September 2013 to August 2014 at Cantonment hospital Rawalakot, AJK. Structured checklist was developed; piloted, pretested in another hospital on 10 patients and used after minor modifications were made. Ethical consideration was taken from institutional review board of Health Services Academy. Data was analyzed and entered through SPSS version 20 and descriptive statistics such as frequencies, proportions, mean and percentages were then calculated. Through records information on women's demographics and obstetric/gynecological history was exacted on a check list. Also women who had been admitted in the hospital, had undergone CS and had received blood transfusion, were interviewed for their experience of having received blood transfusion. The principal investigator generated a list of patients admitted for a CS and who had received a blood transfusion. At a time convenient to the patient, the data collectors trained by the PI interviewed the patients exploring their experiences of having received the transfusion. For this purpose, staff nurses had been trained. The nurses interviewed the patients when they were not on duty. These interviews were recorded after taking consent from the respondents. Saturation was reached after 15 women were interviewed. Thematic analysis was carried out using transcripts of the in-depth interviews. Open coding was done from which categories and themes were drawn.

RESULTS:

A total of 887 cesarean sections were performed within the study period. Seventy three patients (8.23%) received blood transfusion. Regarding the age, 25 patients (34.2%) were between 18 - 25 years, 33 patients (45.3%) between 26 - 30 years, 8 patients (10.9%) between 31 - 35 years while 7 patients (6.2%) were in the range of 36 - 40 years. The mean age was 28.32 + 4.89 year. Out of 73 patients, 24 (32.9%) were booked patients and 49 patients (67.1%) were un-booked. Among un-booked patients those who received blood transfusion forty one(83.7%) had received no ANC while eight patients (16.3%) had seen another healthcare provider at least once for ANC outside of the hospital. Previous cesarean section was the most common reason for blood transfusion during cesarean section. Out of 73 patients undergoing CS, 25 patients (34.2%) with previous history of CS received blood transfusion. No immediate medical reason was stated as to why they were transfused blood. Six patients (8.2%) with placenta previa, 13 patients (17.8%) with obstructed labor, 7 (9.6%) with abnormal presentation, 14 (19.2%) due to fetal distress, 2 (2.7%) with PPH and 6 (8.2%) with preeclampsia received blood transfusion.

Poor Knowledge on Blood transfusion during CS

Fifteen patients were interviewed by the staff nurses. Among them eleven were had 1-3 children and four had 4-7 children. All the patients interviewed were housewives. Seven respondents had had primary or secondary level education. Four had intermediate or graduate degree while four respondents were illiterate. The main theme identified was the patients poor knowledge about the need for blood transfusion and the risks associated with it. The respondents were not aware of the purpose of blood transfusion. They had no knowledge about its risks and benefits. Many had come to know in the hospital that they needed blood transfusion and blood transfusion was needed for them to undergo CS. The Healthcare providers' had not provided explained the need for the transfusion. In most of the cases the consent was taken from the husband or
the guardian and women were not told about the transfusion hazards or the need for it. Most of the respondents had not gone for antenatal care. Once they developed complications in the hospital, they heard about the blood transfusion. Most respondents were not aware that they were anemic. They had poor knowledge about anemia, how to prevent it with appropriate diet-supplements or how it could result in their needing a blood transfusion at the time of delivery.

**DISCUSSION:**

Blood transfusion rate during cesarean section was 8.23% in this study and the most common indication for blood transfusion was previous cesarean section. These patients were reported with the impairment of full and sustained uterine retraction due to previous myometrial scaring, resulting in increased blood loss and hence need for blood transfusion. This finding is consistent with the findings from a study conducted at University of California which showed that previous caesarean section patients without trial of labor required more blood transfusion, intensive care unit admission and hospital readmissions than women with previous vaginal delivery. Second most common indication for blood transfusion identified in this study is obstructed labor i.e. 27.4% which is comparable to results of study done in Lahore (21.2%). The most common cause for obstructed labor was cephalo-pelvic proportion (17.8%) followed by mal-presentation and mal-position (9.6%). Obstructed labor still poses great maternal and fetal risk in our setup. Most of these causes are preventable by properly trained staff. Improving the access to and promoting the use of reproductive and contraceptive services will help reduce the prevalence of this complication. Third most common indication for blood transfusion is fetal distress i.e. 19.2%. The fourth common indication for blood transfusion in our study was placenta previa and pre eclampsia i.e. 8.2% each. Gestational age at delivery and type of surgery required are predictors of transfusion during caesarean for placenta praevia. Risk factors for blood transfusion in women with placenta praevia are advanced maternal age. Pregnancies complicated by placenta previa are noted for increased blood loss and transfusion at delivery. An un-booked patient is five times more likely to receive blood transfusion during caesarean section than women who have regular antenatal care. In our study among un-booked patient 83.7 patients had not gone for ANC and only 16.3 % have had ANC which is comparable to studies conducted in Lahore and Nigeria.

ANC indirectly saves the lives of mothers and babies by enhancing and maintaining good health before childbirth and the early postnatal period which carries the highest risk. ANC often provides the first opportunity for a woman to get health services, thus providing an entry point for integrated care, promoting healthy home practices, inducing care seeking behaviors, and leading women with pregnancy complications to a referral system. Women are more likely to give birth with a skilled attendant if they have had at least one ANC visit. Poor utilization of antenatal care services is associated with a number of adverse obstetric outcomes. In this case, lack of antenatal care was a factor in transfusion at cesarean section. This population of patients often present to the hospital as difficult cases beyond the scope of peripheral hospitals. Therefore they may inherently have other obstetric complications which may predispose them to poor obstetric outcome. Antenatal care has been shown to positively influence hematocrit value in a population of Nigerian women. Supervised care would identify such complications of pregnancy and enable a goal-directed approach to labor and delivery. Thus, the panacea appears to be improved antenatal care. Meanwhile, patients who are presenting in labor without adequate prenatal care should have donor blood cross-matched for cesarean delivery. The risk of perioperative blood transfusion is real and should be addressed. The associated adverse maternal and fetal out-comes demand preoperative cross-matching and aggressive strategies at minimizing blood transfusion. The desired targets after transfusion should also be realistic. This will eliminate multiple-unit transfusion and the associated risks, especially when single-unit transfusion might be adequate. The indications for the caesarean section and quantity of blood loss during caesarean section were significant risk factors for blood transfusion. Efforts should be made to reduce the blood transfusion without increasing maternal morbidity and mortality. The study was conducted in only one facility and hence certainly limits the applicability of these findings to a broader population.

**CONCLUSION:**

Most common reason for blood transfusion identified in this study was previous cesarean section. The other main causes for blood transfusion were obstructed labor and fetal distress. Patients had poor knowledge about need for blood transfusion during delivery. They had been poorly informed of the risks associated with blood transfusion in the hospital.

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