

Brain Drain of Doctors; Causes and Consequences in Pakistan

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Abstract—Pakistani doctors (MBBS) are emigrating towards developed countries for professional adjustments. This study aims to highlight causes and consequences of doctors' brain drain from Pakistan. Primary data was collected from Mayo Hospital, Lahore by interviewing doctors (n=100) through systematic random sampling technique. It found that various socio-economic and political conditions are working as push and pull factors for brain drain of doctors in Pakistan. Majority of doctors (83%) declared poor remunerations and professional infrastructure of health department as push factor of doctors' brain drain. 81% claimed that continuous instability in political situation and threats of terrorism are responsible for emigration of doctors. 84% respondents considered fewer opportunities of further studies responsible for their emigration. Brain drain of doctors is affecting health sector's policies / programs, standard doctor-patient ratios and quality of health services badly.

Keywords—Brain Drain, Emigration, Remuneration, Political instability, MBBS doctors

I. INTRODUCTION

BRAIN drain of doctors from Pakistan to developed countries is being considered as a great loss for nation. Brain drain is regarded as international movement of educated and talented people from one country to another. It is migration of skilled human resource for employment, trade, education, etc. [20]. Pakistan is confronting with this serious issue, because many of the semi-skilled and skilled professionals migrate to nations which offer higher salaries, social benefits and other desirable conditions [16]. Basically, this is a nation's scientific, technical and leadership loss when skilled people change their place of origin to practice their learning. The migration of scientists, engineers and doctors between different countries has been a critical concern for think tanks and still an unsolved problem.

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“Reference [8] stated that the term brain drain was coined by the spokesmen of the Royal Society of London to describe the outflow of human capital, scientists and technologists to the United States and Canada in the early 1950s” The phenomenon is also known as relocation of intellectual human capital from developing countries to developed countries [8]. The trend is distressing the non-industrialized and developing countries where human potentials is re-arranged with unskilled manpower by relocation of highly educated and trained personnel to industrialized countries. Doctors are migrating from developing countries to developed ones at large scale. “About 6% of the world's physicians (140,000) were found outside their countries of origin. It was also estimated that 90% of all migrant physicians were moving to just five countries: Australia, Canada, Germany, UK and USA” [9]. Indeed the experiences of intellect's brain drain differ from country to country. However, emigration of intellectuals from country of origin is often perceived a great loss. Mostly poor countries are facing acute shortage of specialized manpower e.g., doctors, engineers and scientists hence many public and private positions remain vacant. As a result, developmental targets prescribed in development vision are not achieved. Number of Pakistanis, who wish to emigrate and settle abroad, is rising yearly basis. Coincidentally, the people who emigrate and settle abroad are educated and skilled. The situation does not go in favor of developmental ideology of the country but it contributes in growing crisis of economic stability of the nation. Pakistani Government spends billions of rupees to educate masses and to produce experts in different field of life. But “unfortunately these experts are migrating abroad due to non-existence of market according to their capabilities” [1]. Pakistani professionals are leaving country at an alarming rate since last three decades. According to Pakistan Overseas Employment Corporation, close to 36,000 professionals, including doctors, engineers and teachers, have migrated to other countries during last 30 years [14]. Actually, the workers from all skilled professions are losing or have lost complete faith on economic stability of the country. Gallup survey reveals that the semi-skilled and unskilled workers desire to emigrate for better prospects. “Sixty two percent of adult respondents who were interviewed expressed the desire to emigrate and 38 percent shared that they would prefer to settle outside permanently” [8]. Similarly, the magnitude of emigration of health professionals from Pakistan is substantial. It is estimated that “annually 1,000 to 1,500 physicians leave the country and only 10–15% return after spending few years abroad” [6]. Therefore, the country has lost about 25 percent of its medical doctors (MBBS) to date. In addition to, medical institutions are also not producing so many doctors to

implement the standardized WHO criteria of doctor-patient ratio (1:300) in the country. There are scarce opportunities to train and educate such professionals [12]. Public sector medical colleges are producing 2321 and private sector medical colleges are producing 2100 doctors every year in Punjab [13]. MBBS doctors are social asset of Pakistan. Public sector institutes are charging Rs. 0.100 to Rs. 0.150 million from a student to complete MBBS training whereas private sector medical institutes are charging about Rs. 2.5 million for five years. To meet the health care targets, the Government spends about Rs. 2.000 million on each medical student during five years. Basically, the Government subsidizes fee of MBBS students hence they have to bear nominal expenditures during studies. Government facilitates the students by assuming that they will contribute in health sector and facilitate the vulnerable population after completing studies. On the other hand, family institute bears the fee and other educational expenditures of MBBS students by compromising other necessities of life with the desire for improved living standard in future. In many cases, individual or familial desires overcome the national needs and many MBBS doctors depart to Middle East or European countries by accepting attractive pay packages. There is no doubt that this is an individuals' benefit but nation deprives from qualified persons whose training was based on revenue generated by the Government, charging different types of taxes from masses. In Pakistan, every year almost half medical graduates are leaving the country and majority of them is from the province of Punjab [14]. This situation is fabricating feelings in society that MBBS graduates are being produced for other countries. Even many MBBS students develop understating during studies to go and settle abroad. At present, "there are 162,000 doctors in the country out of which 76,000 doctors are working at different public / private hospitals and clinics in Punjab" [7]. Country is not losing its investment in medical education only but also depriving from contribution of MBBS doctors in feeble health care system. In this study the researchers tried to explore the causes and consequences of MBBS doctors' emigration to other countries.

II. REVIEW OF LITERATURE

Briefly literature was reviewed to develop understanding with causes and consequences of brain drain from developing countries. Reviewed studies were divided into three parts; causes of brain drain, consequences of brain drain and brain gain to determine the scope of current research.

Causes of Brain Drain: Reference [3] analyzed motivating factors of the physician's migration from developing countries to more developed countries. They used a cross-section data of 141 countries those lost physicians result of emigration towards developed countries. They explored that better earning opportunities attract doctors for emigration. They concluded that migration from developing countries is worrisome aspect because these countries have huge proportion of poor population and higher burden of diseases, thus they can ill afford to lose their physicians. Reference [15] conducted a study on the professional migration of health physician in America. According to him the Physicians' migration varies with per capita income. The results indicate

highest migration rates from middle-income countries. He concluded that there are many factors which push the physicians to leave less income countries. He found per capita income of developed countries, as a pull factor for doctors' brain drain. Reference [17] studied the international flow of emigrants, especially doctors. They described the migration of health professionals for better employment opportunities, earnings and social adjustments, both within countries and across international borders. They concluded that young, healthy, well-educated and skilled individuals prefer to migrate, especially in pursuit of higher education and economic stability. It was observed that continuous disparities in working conditions between richer and poorer countries offer a greater 'pull' towards more developed countries. This study concludes that migration of health professionals is based on a combination of economic, social and psychological factors. Reference [2] explored the factors of emigration of doctors from West African countries to developed countries, primarily the US and the UK. They visited six medical schools in West Africa to investigate the causes of their emigration. The subjects were students and post-graduate residents in six medical schools of Ghana and Nigeria. They concluded that there was firmly rooted medical migration culture which did not discourage emigration of medical professionals but actually encourage it. The medical faculty was proud of their students who migrate to developed countries. The students and faculty members of medical schools were recognizing emigration of faculty members / senior students as role model due to gained socio-economic benefits which they were enjoying. Reference [11] conducted a study at Agha Khan Medical University in Karachi about the brain drain of doctors from Pakistan and its causes that force the doctors to emigrate from Pakistan. They described that 95% students of AKU and 65% students of BU want to emigrate due to poor salary in Pakistan. They also indicated the factors of poor quality of training and work environment in Pakistan.

Consequences of Brain Drain: Reference [5] analyzed the immigration of physicians to developed countries and found that many of them were coming from lower-income countries. The recipient nations and immigrants both attain benefits from migration but less developed countries loose valuable human resources in medical sector. He also highlighted that migration of physicians has adverse consequences on education, economy, and development of origin countries. Reference [22] described the adverse consequences of doctor's migration and found that the brain drain of doctors is responsible for meager health care services and lack of coverage in medication of certain diseases in country. Reference [18] studied the consequence of brain drain in Pakistan. They indicated several implication of brain drain and reported that brain drain has socially bad impacts on donor country. Brain drain implies a continuous regeneration of skilled professionals such as medical profession, due to rapid growth for population. Reference [10] studied the consequences of brain drain in developed countries. He was of the view that absence of proper pharmaceutical, "brain drain" of doctors

and medical researchers result in shortage of capable people to implement medical services properly. Reference [19] conducted a study about the impact of emigration of doctors, who emigrate from Pakistan to British and American countries. In case of high migration rate between said countries, Pakistan has to face many problems in its health and medical education sectors. He stated that there is already shortage of medical doctors and due to lack of quantity, the quality of health also suffers. In this regard they stated, "A straightforward supply-demand equation, it is sustained by multiple synergistic forces. The phenomenon has economic, socio-demographic, ethical and moral implications, but the human dimension may be the most important of all".

Brain Gain- Reference [4] declared brain drain as a curse for developing countries. He was concerned about the magnitude of brain drain from developing to developed countries, its reasons and the way it affects on the well-being inhabitants and societies of origin. He studied the phenomena of brain drain for years and concluded its positive affects for donor countries. He explored that brain drain is much beneficial in the science of human capital flight to brain circulation such as, education, technology, experience, governance and development etc.

III. OBJECTIVES

- To investigate the causes behind motivation of doctors for emigration
- To explore the consequences of doctors' emigration on socio-medical conditions of people
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IV. METHODS AND MATERIAL

100 MBBS doctors were interviewed by using systematic random sampling technique from the Mayo Hospital, Lahore (Pakistan). Initially, a list 500 doctors was prepared with the help of Medical Superintendent, Mayo Hospital, Lahore. Listed 500 doctors were working in Main Emergency, Out Door Wards, East, West and South Medical Wards, Cardiology Department, Dental Department, Surgery Department, Children OPD and Anesthesia Department at Mayo Hospital, Lahore. Every 5th listed doctor was interviewed about his motivation and attitude for emigration. Well structured questionnaire was used as data collection tool. Selected respondents were asked different questions about their satisfaction with existing pay packages, duty hours, difficulties in existing job, diagnostic and treatment facilities available at work place, communication with health department, accommodation and other benefits and psychological satisfaction regarding social status etc. 10% interviews were conducted as pre-testing before formal data collection, nominal discrepancies and few unnecessary questions were removed from data collection tool. Data was analyzed by using SPSS.

V. GENERAL FINDINGS

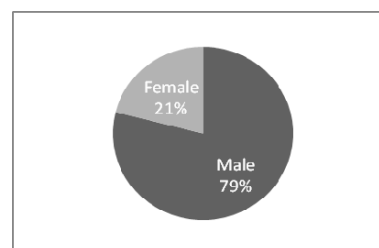


Fig. 1 Gender of Respondents

Interestingly, proportion of working female doctors was less than male doctors, which is contrary to high enrollment of female students (more than 70%) in medical colleges of country.

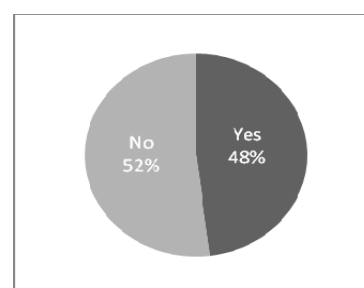


Fig. 2 Visit of Doctors to Foreign Country

About half respondents had foreign visits for different purposes e.g., family visit, medical conferences, symposiums, short-term trainings, higher qualifications and advance surgical procedures.

TABLE I
LESS FINANCIAL GAINS AND MOTIVATION FOR EMIGRATION AMONG DOCTORS

	Category	N	Observed Prop.	Test Asymp.	
				Pro p.	Sig. (2-tailed)
Financial Gains	Group 1 Agree	83	.83	.50	.000 ^a
	Group 2 Neutral	17	.17		

It was hypothesized that less financial gains are motivating doctors for emigration. Binomial (proportion) Test was applied on data and results indicate that level of remunerations in job is motivating doctors to emigrate from Pakistan. Obtained p-value is less than α so the alternate hypothesis H_1 is accepted and it is concluded that level of financial gain is strongly affecting on doctors' decision regarding emigration from Pakistan.

TABLE II
POLITICAL INSTABILITY OF COUNTRY AND BRAIN DRAIN OF DOCTORS

	Category	N	Observed Prop.	Test Pro p.	Asymp. Sig. (2-tailed)
Political Instability	Group 1 Agree	81	.81	.50	.000 ^a
	Group 2 Neutral	19	.19		

It was hypothesized that there is difference between two groups level of agreement regarding opinion that political instability is resulting brain drain of doctors.

Data was tested by using Binomial (proportion) Test of two group values;

$$P(X = r) = {}_n C_r p^r (1-p)^{n-r}$$

n = Number of events.

r = Number of successful events.

p = Probability of success on a single trial.

$${}_n C_r = (n! / (n-r)!) / r!$$

1-p = Probability of failure.

Test results declare p-value smaller than α so alternate hypothesis H_1 is accepted on the basis of given sample data and it is concluded that instable political situation is causing brain drain of doctors from Pakistan.

TABLE III
PROFESSIONAL INFRASTRUCTURE OF HEALTH DEPARTMENT AND BRAIN DRAIN OF DOCTORS

	Observed N	Expected N	Residual
Disagree	8	33.3	-25.3
Neutral	36	33.3	2.7
Agree	56	33.3	22.7

It was hypothesized that there is difference among different levels of agreement regarding opinion that professional infrastructure of health department is causing brain drain of doctors.

Chi Squire test of homogeneity was applied on data which results Chi Squire Value 34.880^a and p-value less than α (0.05) so the alternate hypothesis H_1 is accepted on the basis of given sample data and it is concluded that there is significant difference among different levels of agreement regarding professional infrastructure of health sector which is causing doctors' brain drain from Pakistan.

TABLE IV
MEDICAL EDUCATION SYSTEM OF PAKISTAN AND BRAIN DRAIN OF DOCTORS

	Observed N	Expected N	Residual
Disagree	2	33.3	-31.3
Neutral	14	33.3	-19.3
Agree	84	33.3	50.7

It was hypothesized that there is difference among different levels of agreement about the opinion that existing Medical Education System of Pakistan is causing doctors' emigration.

Chi Squire test of homogeneity was applied on data which results Chi Squire value 117.680^a and p-value less than α (0.05) so the alternate hypothesis H_1 is accepted on the basis of given sample data and it is concluded that majority of doctors are not satisfied with existing Medical Education System of Pakistan therefore they want to continue their professional grooming in foreign countries. They assume that foreign qualification will pay them better in future as compared to local medical higher education.

TABLE V
EMIGRATION OF DOCTORS AND POOR HEALTH CONDITIONS OF PEOPLE

	Observed N	Expected N	Residual
Disagree	83	33.3	49.7
Neutral	6	33.3	-27.3
Agree	11	33.3	-22.3

It was hypothesized that the miserable health condition of people / patients are caused by doctors' migration to other countries. Statistical test accepts null hypothesis because p-value is higher than α and it is concluded that there is significant difference among different levels of agreements regarding miserable health condition of people / patients is caused by emigration of doctors. Majority of doctors did not consider emigration of doctor responsible for miserable conditions of people / patients in the country.

TABLE VI
EMIGRATION OF DOCTORS AND QUALITY OF HEALTH CARE SERVICES

	Observed N	Expected N	Residual
Disagree	15	33.3	-18.3
Neutral	27	33.3	-6.3
Agree	58	33.3	24.7

It was hypothesized that there is difference among different level of agreements regarding opinion that migration of doctors is badly affecting quality of health care services both in urban and rural areas. Chi Squire Test of Homogeneity was applied on sample data which results Chi Squire Value 29.540 and obtained p-value is less than α so the alternate hypothesis H_1 is accepted on the basis of given sample data and it is concluded that there is significant difference among different levels of agreement regarding adverse affects of doctors' emigration on quality of health care services both in urban and rural areas.

TABLE VII
EMIGRATION OF DOCTORS AND HEALTH POLICY / PROGRAMS

	Observed N	Expected N	Residual
Disagree	5	33.3	-28.3
Neutral	6	33.3	-27.3
Agree	89	33.3	55.7

It was hypothesized that there is difference among different level of agreements regarding opinion that migration of doctors is affecting health policy and programs of the country badly.

Chi Squire Test of Homogeneity was applied on sample data which results Chi Squire Value 139.460^a and obtained p-value is less than α so the alternate hypothesis H_1 is accepted on the basis of given sample data and it is concluded that there is significant difference among different levels of agreement regarding adverse affect of doctors' emigration in the functioning / performance of different health programs even formulation of health policies.

TABLE VIII
EMIGRATION OF DOCTORS AND PRACTICE OF DISPENSERS,
HAKIMS, QUACKS, SPIRITUAL HEALERS

	Observed N	Expected N	Residual
Disagree	9	33.3	-24.3
Neutral	2	33.3	-31.3
Agree	89	33.3	55.7

It was hypothesized that the emigration of doctors is creating space for dispensers, hakims, quacks and spiritual healers to practice both in urban and rural areas. Chi Squire Test of Homogeneity was applied on sample data which results Chi Squire Value 140.180^a and obtained p-value is less than α so the alternate hypothesis H_1 is accepted on the basis of given sample data and it is concluded that there is momentous distinction among different levels of conformity that non-medical professionals are increasing due to emigration of professional doctors in the country.

VI. RESULTS

Causes of Brain Drain in Pakistan: This study focuses on a critical societal issue which has gained an importance in health institutions of the country during current era. The issue is known as brain drain of doctors. Primary objectives of this study were to find out causes and highlight the consequences of doctors' emigration from Pakistan. Besides international migration, lower participation of female doctors in professional life was also observed during this study, the phenomenon is known as *brain waste* instead of *brain drain*. Proportion of working female doctors was 1/4th in initially prepared list of 500 doctors. This was professional contradiction of female's high enrollment in medical colleges of the country. About half doctors had visited different countries for attending conferences, symposiums, education, trainings and surgical procedures. They were exposed with professional facilities and socio-economic benefits provided by developed countries to same cadres. Therefore, majority of them was motivated to leave the country by getting employment offer from abroad especially from Middle East Countries.

It was observed that doctors were not being paid reasonably after wide-ranging duties thus they prefer to leave the country. Majority of doctors (83%) were agreed that meager salary packages and absence of additional remunerations in case of over time duties was motivating them to depart from Pakistan. Doctors were considering financial gain as significant cause of their emigration, because not a single doctor opposed it.

According to them significant variations in salary packages are resulting brain drains of doctors from Pakistan. Two doctors out of one hundred respondents specifically mentioned that a medical graduate is paid Rs.18000/- per month in public sector at the beginning of career while an engineer who has same level of graduation degree is paid Rs.25000/- per month. Reference [15] also argued that migration of health professionals is linked to poor remuneration of developing states. According to him Physicians' migration links with country's per capita income and middle-income countries have highest emigration rates. He also stated that there might be other factors which push the physicians to leave origin countries but most persuading feature was the level of financial gain which forces them to migrate from less developed countries to developed ones.

It was observed that discrimination in wages / salaries is creating anxiety among doctors and due to wide financial differences, doctors are preferring emigration. Nobody opposed the statement that limited financial incentives / benefits are compelling them to emigrate in developed countries. The doctors who had exposure with stable and secure political systems of developed countries linked the doctors' emigration with current political situation of Pakistan. But those who had not foreign visits did not relate doctors' emigration with existing political conditions. Majority of doctors (81%) were agreed that Pakistan is undergoing political turmoil these days and instable political scenario is forcing doctors to leave Pakistan. Doctors stated that political influence for recruitment of physicians against vacant positions in hospitals / health centers and irregularities in promotions are disappointing them. Therefore, the feelings of insecurity and absence of meritorious procedures are persuading doctors to emigrate from Pakistan.

Incidences of terrorism are also influencing on the decision to find relatively protected places in the world. Life threat for individuals and families due to recent wave of terrorism is becoming vital cause for doctors' emigration to Middle East and European countries from Pakistan. World Migration Reference [21] refers that the terrorist attacks of 11 September 2001 have had a significant affect on migration processes. The people are migrating due to concerns of national security, economic security and stability.

About half doctors (56%) stated that existing Professional Infrastructure of Health Sector / Department is itself responsible for doctors' emigration from the country. They were in the opinion that working environment of medical department / centers is not supportive for career oriented doctors. They narrated that they have been made temporary adjustments with Government employment by neglecting numerous obstacles but whenever they will find suitable opportunities they would love migrate to other countries. They had feelings that they will have not meritorious career in Pakistan thus they are strongly motivated for emigration to developed countries where job security and merit based promotions are encouraged.

Most of the doctors had opinion that medical education system of Pakistan is causing doctors' brain drain. In their view point, existing opportunities for specialization are scarce and procedures of with pay or without pay study leave are very complicated. Domestic life without continuous financial support does not permit them to join further studies. Therefore, they were not willing to compromise with this income generation resource. They were aware that in developed countries, they will have advantage to continue education, earn money and return remittances to home countries. Reference [17] supported these arguments that medical education system of developing countries is a contributing factor for doctors' emigration. They explained that well-educated and healthy individuals more like to migrate for higher education. The respondents of this study also narrated that there are few institutions which are providing funds to conduct medical research at national level. Doctors who were attached with teaching hospital had desire to focus on research and earn specialized degrees. But according to them, absence of research culture and scarcity of resources persuade them to go abroad for learning and work.

Consequences of Brain Drain in Pakistan: Majority of the doctors (83%) did not consider emigration of doctors responsible for poor health conditions of people / patients. They said that prevalence of different communicable and chronic diseases and the miseries of people are linked with hygienic conditions, living standards and coverage of medication facilities instead of absence of doctors only. They were in the view that Government is not investing in health sector by keeping in view urban-rural demand based rationale. They shared that health sector investments on different programs are made with the consent of international donor agencies without conducting prior need assessment studies. Therefore thousands of disease victims deprive from proper medication due to absence of relevant treatment facilities. But few doctors (11%) were agreed that miserable health conditions of people who are living in rural areas are due to emigration of doctors and only 6 percent remained neutral about statement. Interestingly, 58 percent doctors were agreed that doctors' emigration is responsible for poor quality health services in urban and rural areas of Pakistan. They shared that emigration of MBBS doctors creates "*migration current*" which is filled by dispensers, hakims, quacks and spiritual healers. Dependency of people / patients on semi-skilled / conventional health care providers is deteriorating quality of health care services and health of people. A large majority (89%) of doctors was agreed with the statement that emigration of doctors is providing chance to semi-skilled / conventional health care providers to practice in urban and rural localities. They said that recent interventions of Government in health sector are a milestone; advance diagnostic facilities and free medication are available at health outlets but qualified doctors to work with beneficiaries are scarce which is linked with international migration of doctors. However, 17 percent respondents disagreed with the notion

that emigration of doctors has any link with poor quality of health services.

Government has vision to provide medical facilities to masses at doorstep. Different policies and programs are devised to achieve this goal during formulation of Annual Development Plans (ADP) and Public Sector Development Programs (PSDP) every year. Most of respondents (89%) believed that emigration of doctors is influencing national health policies and programs. They were agreed that scarcity of doctors in the country is hindering implementation of development programs / projects in health sector. Especially the programs those have coverage in rural areas are suffering badly. Only 5% respondents differed with the statement.

VII. CONCLUSION

Meager salary packages, absence of additional financial benefits, political interventions in recruitment and promotion procedures, security threats due to wave of terrorism, inadequate educational / further learning opportunities, absence of research culture and working milieu of health department are salient causes of doctors' brain drain from Pakistan. Poor quality of health services, space for semi or non-professional health care providers and poor implementations of health policies / programs are salient consequences of doctors' brain drain from the country. In addition to, it is concluded that Government is relying on donor agencies for designing relief projects in health sector instead of conducting proper feasibility or need assessment studies. Therefore, this strategy is not helping to achieve maximum targets for health care provision.

VIII. RECOMMENDATIONS

- Existing salary / remuneration packages in health sector is causing doctors' brain drain from Pakistan. It is recommended that existing pay packages should be improved so that qualified and experienced doctors may retain in the country.
- Financial incentives should be offered to doctors with foreign higher qualifications.
- Additional financial incentives should be offered to doctors working beyond duty schedules.
- Feelings of insecurity are common among doctors in terms of job sustainability and social security; the doctors should be endowed with protection from both ways of thinking.
- Doctors working in rural areas should be provided additional allowances and accorded leave for 3-4 days on monthly basis so that they may facilitate family endeavors and spend leisure time in recreational activities.
- Meritorious recruitment and promotion policies should restrictedly be implemented in health sector.
- Doctors should be provided equal opportunities of advance medical education within country and abroad with paid leave.

- Government should provide sufficient funding for medical research so that doctors may be engaged in research to enhance their learning.
- Government should fill a bond with medical graduates before awarding degree which will ensure their presence in the country at least for 3-5 years.

REFERENCES

- [1]. A. Abid, "Brain drain from Pakistan to hurt long-term growth", The Daily News, Pakistan (12 Aug, 2008), Retrieved from; <http://www.defence.pk/forums/economy-development/13447-brain-drain-pakistan-hurt-long-term-growth.html> on 13.01. 2011 at 9:10 pm, 2004.
- [2]. A. Hagopian, A. Ofosu and A. Fatusi, "The flight of physicians from West Africa: Views of African physicians and implications for policy", Social Science & Medicine, Vol. 61, 2005, pp 1750-1760.
- [3]. A. O. Arah, U. C. Ogbu and E. C. Okeke "Too Poor to Leave, Too Rich to Stay: Developmental and Global Health Correlates of Physician Migration to the United States, Canada, Australia, and the United Kingdom", American Journal of Public Health, Vol. 98, Issue No. 1, 2008, pp 148-154.
- [4]. F. Docquier, "Brain Drain and Inequality Across Nations", Discussion Paper No. 2440, IZA, 53072 Bonn, Germany, 2006.
- [5]. F. Mullan, "The Metrics of the Physician Brain Drain", The new England Journal of Medicine, Vol. 353, 2005, pp 1810-1818.
- [6]. Higher Education commission, Pakistan, Retrieved from; <http://www.hec.gov.com.pk> at 4:35 pm, 2008.
- [7]. H. Javaid, "Current Brain Drain of national Doctors", The Daily Jang, Pakistan, July 29, 2009.
- [8]. I. Sarfaraz, "Pakistan's Brain Drain: Do We Not Know or Do We Not Care?" Pakistanis Abroad, Society", Retrieved from; <http://pakistaniat.com/2008/04/02/pakistan-%E2%80%99s-brain-drain-do-we-not-know-or-do-we-not-care> on 02.02.2011 at 01:30 pm, 2008.
- [9]. J.P. Ioannidis, "Global estimates of high-level brain drain and deficit", FASEB J 2004; 18:936, 2004.
- [10]. M. Perry, "Medical "brain drain" hindering AIDS battle." Mon Jul 23, EDT, 2007.
- [11]. N. S. Ali, F. Khimani, M. Andrades, K. S. Ali and R. Paul, "Reasons for migration among medical students from Karachi", Department of Medicine, Aga Khan University, Karachi, Pakistan, 2006.
- [12]. O. Gish, "Brain Drain", The Nation, Lahore Pakistan. Retrieved from; <http://meltingpot.fortunecity.com/botswana/616/oscar.html> on 12.01.2011 at 12: 30 pm, 1997.
- [13]. Pakistan Medical & Dental Council, "List of Recognized medical and dental institutions/ Colleges /DAI's", Retrieved from <http://www.pmdc.org.pk/> on 05.02.2011 at 12:57 pm, 2011.
- [14]. Pakistan's Overseas Employment Corporation, Retrieved from; <http://www.oec.gov.com.pk> on 12.11.2009 at 11: pm, 2005.
- [15]. P. Hussey, "International migration patterns of physicians to the United States: A cross-national panel analysis", *Health Policy*, Vol. 84, Issue 2, 2005, pp 298-307.
- [16]. R.L. Barker, "The social work dictionary (5th ed.)", Washington, DC: NASW Press, 2003.
- [17]. S. Dodani and R. E. LaPorte, "Brain drain from developing countries: how can brain drain be converted into wisdom gain?", The Royal Society of Medicine. *J R Soc Med* 2005, 98: pp 487-491.
- [18]. S. Kaukab and Shahana, "Situation of migration and potential available to reverse the brain drain--case from Pakistan", Public Personnel Management; Spring, Vol. 34 Issue 1, 2005, pp 103-112.
- [19]. S. Shafqat and A. Zaidi, "Unwanted foreign doctors: what is not being said about the brain drain", *J R Soc Med*. Vol. 98, 2005, pp 492-493.
- [20]. World Bank. "World Development Report 2000/01". Washington, DC: 2001.
- [21]. World Migration Report, "Trends in International Migration", Eighty-Fourth Session, MC/INF/256 Original: English 31 October 2002.
- [22]. Z. Aly and F. Taj, "Why Pakistani Medical Graduates Must Remain Free to Emigrate", *PLoS Med*. January, Vol. No. 5, Issue No. 1, 2008.