The Magnitude of Health Managers Turnover in Khartoum State Ministry of Health (KSMOH), Sudan 2005 – 2010

Mohamed Ali Mohamed Alamin

A thesis
submitted in partial fulfillment of the
requirements for the degree of

Master of Public Health

University of Washington
2012

Committee:
Sarah Gimbel
Stephen Gloyd

Program Authorized to Offer Degree:
Global Health

Abstract

The Magnitude of Health Managers Turnover in Khartoum State Ministry of Health (KSMOH), Sudan 2005 – 2010

Mohamed Ali Mohamed Alamin

Chair of the Supervisory Committee:
Assistant Clinical Professor Sarah Gimbel
Department of Global Health

Background; The presence of high-quality, motivated managers is a key aspect of health system performance, but also one of the most difficult inputs to guarantee, particularly in resource-limited environments. Frequency of turnover of key managerial staff has also been associated with poor system performance.

Methods; A descriptive retrospective longitudinal study was carried out of all managers of the eighty nine (89) critical management posts in the Khartoum State Ministry of Health (KSMOH) who were at their post or posted between January 1, 2005 and December 31, 2010, to assess the frequency and severity of senior health manager turnover.

Results; A total of 328 postings of managers were made over the 6-year period in the 89 key health management positions studied. 263(80%) were medical doctors, 28(9%) technicians (public health officers, lab technicians, statisticians), and 37 (11%) were other cadre however only 33 (10%) of them were females. A total of 239 managers left their positions over the study period translating to an average turnover rate of 48% for all cadre. The average turnover rate by cadre over the 6 year period was 53% for medical doctors, 30% for health technicians and 35% for other cadres. Among all managers who left positions, 85 (35%) were at their post for 1 year or less. This group was overwhelmingly comprised of medical doctors (92%). 155 (65%) were in post for less than 2 years, 139 (90%) of them were medical doctors, 12 (8%) were other cadre while only 4 (3%) were health technicians. The average employment period for all managers was

approximately 2 years. On average, doctors stayed for ~1 year less than technicians and other cadres included in this sample.

Conclusion; A high and increasing turnover rate over the study period was observed among the key health managers in (KSMOH). Doctors are the most likely managers to leave their positions, therefore moving towards to public health and management-oriented leadership style at health departments may improve the stability and continuity of the national health system in Sudan.

TABLE OF CONTENTS

Page

LIST OF FIGURES

Figure Number Page

LIST OF TABLES

Table Page

ACKNOWLEDGMENTS

It would not have been possible to write this thesis and award this GHMPH degree without the support and help of many kind people around me, I would like to give particular mention to some of them here. Above all, I would like to thank my father Ali Mohamed Alamin and my mother Fatima Ballal. Special thanks to my wife Salwa and my son Albarra who stayed with me in Washington, they warmed the freezing nights and lightened the darkness of Seattle winter. Deep thanks to my brothers and sisters, in particular my youngest sister Nazic.

This thesis would not have been possible without the help, support and patience of my thesis chair Sarah Gimbel and my thesis committee member Steve Gloyd who provided me with not only academic supervision and advices but also mentorship and lot of encouragement. Special thanks to my Global Health department advisors, Julie Brunett and Aaron Katz, and to the rest of the department wonderful team, colleges and friends.

I would like to acknowledge the cooperation, support, and encouragement provided by Khartoum State Ministry of Health different departments. I am most grateful to my colleges in planning department, Federal Ministry of Health in Sudan particularly Nahid for her technical support and advice in statistical analysis.

DEDICATION

To my parents and beloved family

BACKGROUND

General Background

The presence of high-quality, motivated health managers is a key determinant of health system performance, but also one of the most difficult inputs to guarantee, particularly in resource-limited environments. There is a considerable body of literature attesting to the fact that the migration of skilled professionals from developing to developed countries is large and increasing dramatically {1}. This frequency of turnover of key managerial staff is associated with poor system performance {2}. Also, the presence or absence of appropriate human resource policies has been shown to positively or negatively influence health systems capacity and functioning in recent studies {1}, {2}, {3 }.

The WHO/ World Bank/ USAID handbook {4} refers to turnover as the "workforce loss ratio" and calculates it by defining the number of workers who have left in the last year (leavers) as the numerator, and total number of health workers as the denominator. One limitation of this standard measure (leavers in the year/total workforce) is that it is normally calculated annually at the national level and, thus, may hide differences between sites or seasonal variations {5}.

In the literature, this problem of aggregating turnover data has been raised, and more sensitive measures have been developed particularly stratifying targeted groups such as senior management{6}and other specialized employees, including pharmacy, social work and laboratory. In other studies, turnover, has been alternately defined as the proportion of staff of a particular occupation or workplace who have left the organization (or have moved other jobs

---

[1] Ozden C, Schiff M, (eds.), *International Migration, Remittances and the Brain Drain* (New York: World Bank and Palgrave Macmillan, 2006).

[2] Jokhio AH, Pappas G, & R. Lancashire RJ : Health System Managerial Staffing Patterns: Public Sector Experience From Pakistan . The Internet Journal of World Health and Societal Politics. 2008 Volume 5 Number 1

[3] Packer C, Labonté R, Spitzer D, Globalization and Health Worker Crisis. WHO Commission on Social Determinants of Health Authors:. Globalization and Health Knowledge Network: Research Papers. August, 2007

[4] Dal Poz M, Gupta N, Quain E, Soucat A: Handbook on monitoring and evaluation of human resources for health: with special applications for low and middle income countries WHO Geneva; 2009.

[5] Buchan: Reviewing The Benefits of Health Workforce Stability. Human Resources for Health 2010 8:29. retrieved from (http://www.human-resources-health.com/content/8/1/29)

[6] Sullivan J. 2003. The Right Way To Measure Turnover: retrieved from (http://www.ere.net/2003/10/06/the-right-way-to-measure-turnover/) on 3/28/2011.

within that organization) within the last twelve months {7}. Another measure used to assess workforce stability is worker-reported average duration in post which was also calculated in this study. This method was employed previously by researchers in Pakistan. Using administrative human resource data on the transfer and posting of the 54 top provincial officers of the Sindh Department of Health over a 24-year period (1981-2004), a high rate of transfers (689 transfers) was reported, with almost half (48.9%) of these transfers occurring within less than 1 year {2}. In this study the turnover rate of health system managers was calculated for 89 key management positions in the Khartoum State Ministry of Health (KSMOH) in order to better understand their current challenges to improve health outcomes with limited human resources for health.

Khartoum State Ministry of Health (KSMOH)

The national capital of the Republic of Sudan, Khartoum is the capitol of Khartoum state. The state is located in the central region of Sudan at the convention of the Blue and White Niles, the main contributors to the greater Nile. The state has a total area of 22,142 (sq.km.) and is the most populous state among the 25 in Sudan with a total population of 5,274,321{8}. Khartoum state is divided administratively into 7 localities (namely *Khartoum, Jabal Awliya, Omdurman, Ombada, Karary, Bahry and Sharq Elnil*)

Health management in Khartoum state is comprised of three distinct levels which follow a hierarchical structure; the State Ministry of Health (n=1), Health Administration Localities (n=7) and Health Area Management Teams (n=18). The State Ministry of Health is headed by a state minister who is a political appointee. The technical leader of the State Ministry of Health is the Director General. There are six main General Directorates in the Khartoum State Ministry of Health (KSMOH); health planning and development, preventive medicine, curative medicine, primary health care, pharmacy, and finance and administrative affairs figure (1). Each General Directorate has between 5-10 sub-directorates, with a total of 58 sub-directorates in KSMOH {9}.

Managers are not officially divided into high, middle or entry level in the KSMOH, however for the purposes of this study we will consider the Director General (n=1) and the

[7] Buchan: Reviewing The Benefits of Health Workforce Stability. Human Resources for Health 2010 8:29. retrieved from (http://www.human-resources-health.com/content/8/1/29)

[8] National Census 2008. Central Bureau of Statistics, Sudan. Retrieved from (http://www.cbs.gov.sd/) on 03/01/2011

[9] Khartoum State Ministry of Health, 2010. Retrieved from (http://www.healthkrt.gov.sd/home.php) on 3/03/2011

Directors of the General Directorates (n=6) as high level managers, the Directors of sub-Directorates (n=43) as mid-level managers, and Localities Health Managers (n=21) and the Directors of Health Area Management Teams (HAMTs) (n=18) as entry-level managers. These (89) management posts were selected as the target population for this study as they are the most crucial for ensuring the functionality of the KSMOH as they are responsible for policy making; strategic and operational planning; program implementation; program monitoring and evaluation; supervision of primary, secondary and tertiary health facilities; and community level health services such as midwifery, immunization and health education.

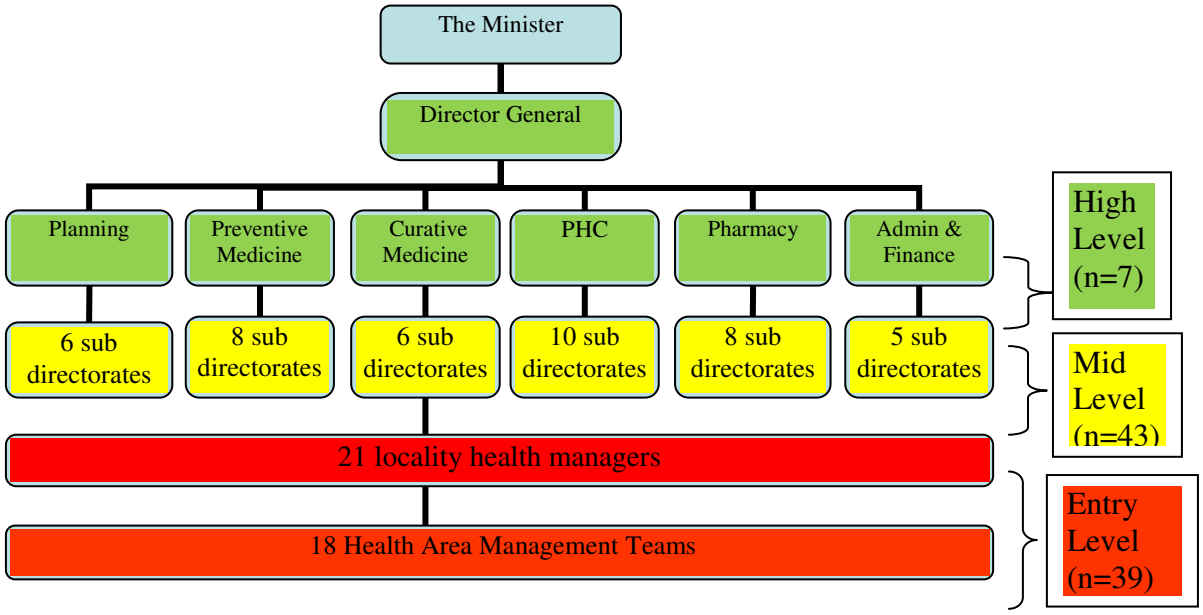

Figure 1. The organizational structure and management levels in the KSMOH.

Although not routinely reported, high staff turnover is common at the KSMOH, among both health service delivery and management staff. Many previous studies carried out in Africa have examined the migration of health workers through follow up with graduates from health sciences universities and institutes. One study (2005) found that over half of all graduates from

Uganda's Makerere University 1984 graduating class worked outside the public sector {10}. A study of 200 medical school graduates from South Africa showed high attrition from the public sector to the private sector {11}. In 10 years between 1986 and 1995, 61% of the output of one medical school in Ghana had left the country {12}. There are many drivers of attrition in resource limited settings. A study in Uganda (2009) revealed that poor job satisfaction among clinicians led to an increased risk of migration to other countries for work or to leave the profession entirely (46% stated they would leave if they were offered the chance.) {13}.

Study Rationale

Health research in Sudan has been dominated for decades by epidemiological surveys and vertical disease-specific studies with very few examining the health system. This study will address one of the major challenges to health system functioning and development: human resources for health. Previous studies related to brain drain have been carried out in other African countries including Uganda, Ghana, South Africa, Zambia, and Mozambique. However, to date, no studies have measured the turnover rate or documented the phenomenon of brain drain in Sudan.

This study documents frequency and severity of health manager turnover within Khartoum State Ministry of Health (KSMOH) between the years of 2005 and 2010. In addition, information on where managers go after they "turnover" will be documented. Data on the numbers and destinations of transferring health managers will inform subsequent research to better understand why health managers leave their posts and assist the KSMOH in understanding the magnitude of the management staff turnover problem as well as help facilitate evidence-based planning and the development of appropriate HR retention policies.

---

[10] Dambisya YM. The fate and career destinations of doctors who qualified at Uganda's Makerere Medical School in 1984: retrospective cohort study. BMJ. 2004 Sep 11;329(7466):600-1.

[11] Price M, Weiner R. Where have all the doctors gone? Career choices of Wits medical graduates. S Afr Med J. 2005 Jun;95(6):414-9.

[12] Dovlo D, Nyonator F. *"Migration of Graduates of the University of Ghana Medical School: A Preliminary Rapid Appraisal"*. Human Resources for Health Development Journal (HRDJ), ISSN 0859-8037 Volume 3, Number 1Praboromrajchanok Institute, p34-37. January - April 1999.

[13] Hagopian A, Zuyderduin A, Kyobutungi N, and Yumkella F. Job Satisfaction And Morale In The Ugandan Health Workforce. *Health Affairs*, 28, no.5 (2009):w863-w875. (published online August 6, 2009; 10.1377/hlthaff.28.5.w863)

General objective

The general objective of this study is to describe the magnitude of health managers turnover in Khartoum State Ministry of Health, Sudan between the years 2005 - 2010.

Specific study questions / aims

The study is designed to answer the following specific questions;

1. Between the years 2005 – 2010; what was the trend of turnover rates of key health managers at KSMOH?
2. What was the average length of posting for key health managers?
3. Of those that left what proportion:
    - rotated within the KSMOH
    - left the KSMOH and moved to in-country organizations either
        - NGOs
        - private sector health facilities, or
    - left to work outside of Sudan
4. What proportion of the key health managers who left either
    - voluntarily left their posts, or
    - had their posting terminated by KSMOH
5. How significant is the experience difference between internal migrators (managers who left the position but stay in KSMOH) and leavers (managers who left the KSMOH)?

METHODS

A descriptive retrospective longitudinal study was carried out examining all managers in 89 critical management posts described above in the KSMOH who were at their post or posted during the 6 year data collection period (1st January 2005-31st December 2010). A structured data collection tool was used, and completed via review of the KSMOH administrative and human resource records and through interviews with key informants in each department. Basic information including; gender, dates of job appointment and termination, type of termination (worker or employer instigated), educational background ((a) doctor, (b) technician, or (c) other), and location of subsequent position (a) transferred to other KSMOH department, (b) moved to other in-country public sector, (c) went to private or NGO sector, or (d) left the country, was collected. Additional data on their years of work experience and their qualifications were also compiled.

As this study exclusively employs quantitative methods, it was limited in its ability to describe the principal causes of health manager turnover. Further research is needed to delve into these drivers of health system migration which could subsequently inform policy. A limitation of this study is the focus on departmental and programmatic managers and not hospital managers. Hospital managers were excluded as they are primarily clinical specialists and not typically trained as health managers, and thus were considered a different population than targeted by this study.

IRB approval was obtained from the Human Subject Division HSD at University of Washington and ethical approval was obtained from the research department at Khartoum State Ministry of Health. The data was entered into Statistical Package for Social Sciences (SPSS-16) program and descriptive statistics were performed as well as an inferential statistics.

RESULTS

328 Individuals were posted to one of 89 key health management positions over the 6-year study period. The majority were medical doctors (80%), followed by technicians (including public health officers, lab technicians, and statisticians) (9%). Only 33 (10%) of them were female. A total of 239 managers left their positions over the study period translating to an average turnover rate of 48% for all cadres. At the point of data collection all 89 positions were filled. The average turnover rates stratified by cadre over these 6 years were 53% for medical doctors, 30% for health technicians and 35% for other cadres.

Among all managers who left these positions, 85 (35%) were at their post for 1 year or less and this group was overwhelmingly comprised of medical doctors (92%). 65% were at post for less than 2 years. The average duration of appointment for all leaving managers was 2 years. On average, doctors duration at post was 1.8 years, whereas technicians and other cadres stayed considerably longer (3.1 and 2.8 respectively) (Table 1). The distribution of all mangers according to years spent in their positions (duration) is highlighted in Figure (2).

Table 1. Average time in position by Manager Cadre

Case Summaries		
Cadre	Mean	Std. Deviation
Doctors (n=263)	1.8	1.8
Technicians (n=28)	3.1	1.4
Others (n=37)	2.8	1.9
Total	2.0	1.9

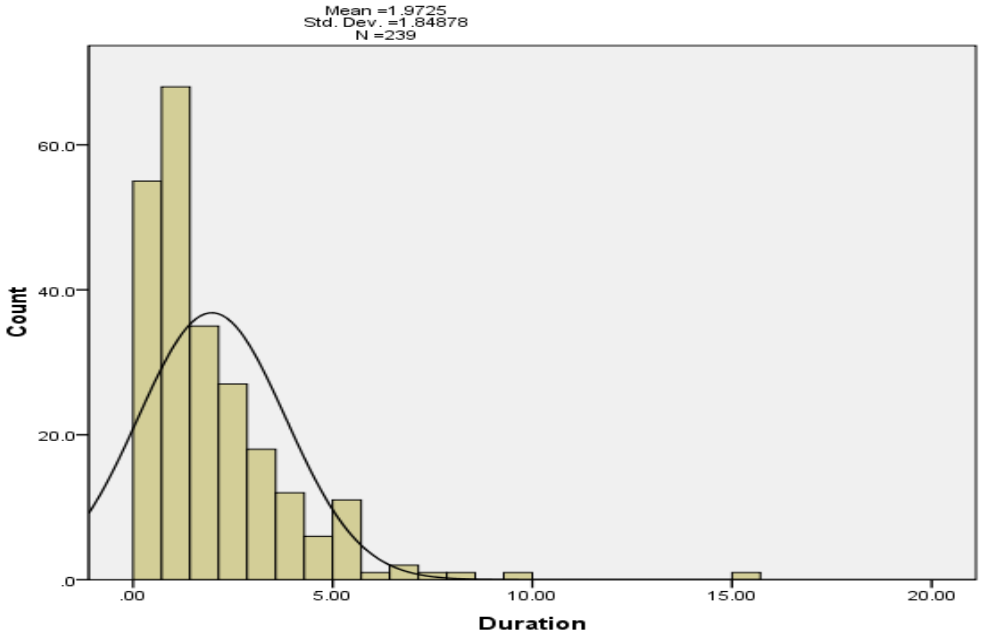

Figure 2. Distribution of managers according to their duration in position.

Per our definition the annual turnover rates were calculated by dividing the total number of leaving managers per year (numerator) by the total number of positions (denominator) which was maintained at 89 during all six years and multiplying by 100 to obtain the percentage. The turnover rate for each professional category (doctors, technicians and others) was also calculated see (Table 2).

Table 2. Annual turnover rates (T0R) by Manager Cadre

Year	TOR (All)	TOR (Doctors)	TOR (Technicians)	TOR (Others)
2005	38%	43%	56%	0%
2006	46.%	47%	22%	67%
2007	35%	40%	11%	25%
2008	57%	65%	33%	33%
2009	55%	62%	22%	50%
2010	54%	60%	33%	33%
Average	48%	53%	30%	35%

According to the KSMOH employment data, 68 positions were required to be filled by a physician, 9 by a technician and 12 by other cadres. The TOR trends for each category over the six years period is displayed in figure (3).

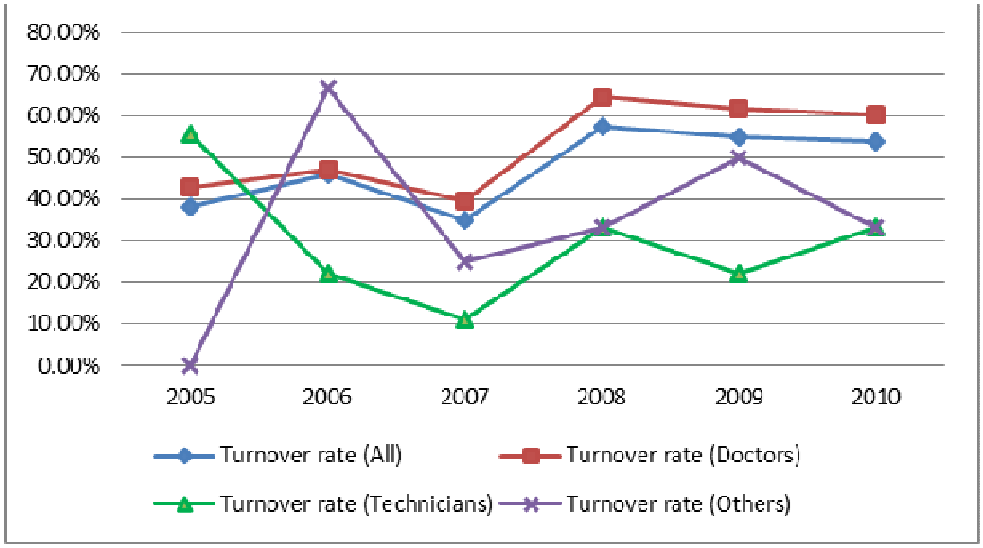

Figure 3. TOR trend over study period by managers categories.

The turnover rate trend over the 5 years by level of managers (high, middle and entry levels) is displayed in figure (4). The trend lines displayed in the graph show a more positive trend among the high level managers compare to middle and baseline managers. The entry level managers have high and steady turnover rate which indicate constant turnover leading factors over the time. Although leading factors to turnover are not the subject of this study, this result indicates change in high and middle levels turnover leading factors or their effect.

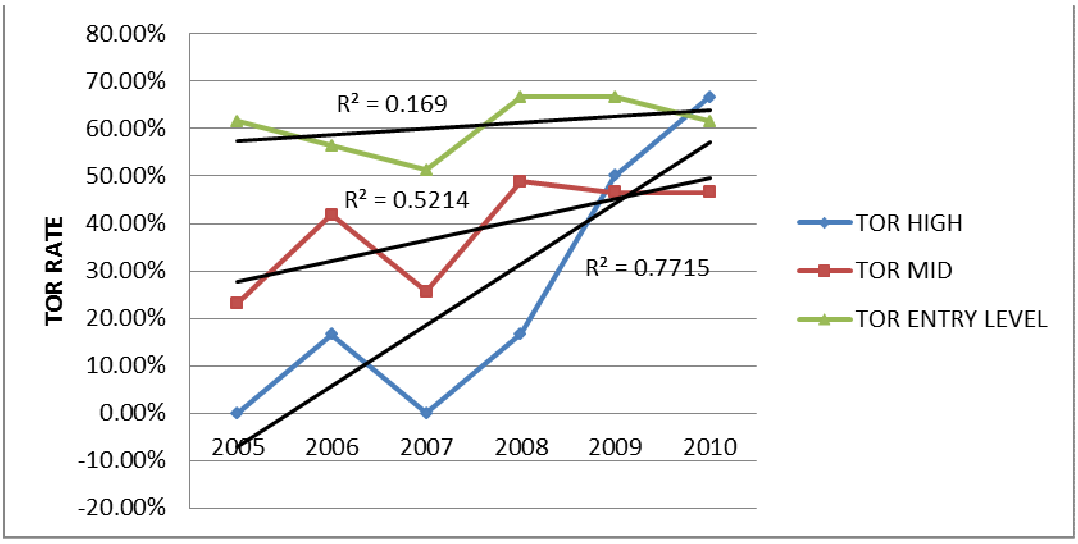

Figure 4. The TOR trend by level of managers.

Of the 239 managers who left their positions, over the six year period, (112) 47% left the KSMOH while (127) 53% migrated internally to other positions within KSMOH. Of those leaving, 49% left for positions outside the country and all were medical doctors. The other 49% moved to public sector entities and 2% left for the private or NGO sectors. 60% of the 239 managers who left these positions because they were either fired or moved by KSMOH to other positions and 35% left of their own accord (quit). The source of termination was unclear for the remaining 5%. Almost all of those who quit were medical doctors (99%).

According to this study the average experience in public health for high level managers is 12 years, middle-level 10 years and entry-level is 6 years. We compared the mean duration of work experience between managers who internally migrated with those who left the KSMOH using an independent sample T-test. We found a significant difference between these two groups (Sig. (2-tailed) = .032) indicating that those who left the system were more likely to be more seasoned and expert managers in terms of their work experience.

Table 3. Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means						
								95% Confidence Interval of the Difference	
Experience	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Equal variances assumed	12.794	.000	-2.152	237	.032	-2.09526	.97381	-4.01369	-.17684
Equal variances not assumed			-2.101	190.142	.037	-2.09526	.99740	-4.06265	-.12787

DISCUSSION

The turnover rate in a given organization is an important statistic to use to assess the overall health of an organization {14}. When compared to other regions of Sudan, Khartoum State has a relatively better economy and good staff retention and health service delivery by virtue of a motivated, skilled, and well deployed workforce {15}. Despite the relative welfare of Khartoum state when compared to the other 14 states of Sudan, KSMOH is still experiencing high TOR across all levels of the health system. Research has demonstrated that top management turnover can weaken the operational effectiveness of organizations {16}. This assessment found that senior managers of the KSMOH leave at a faster rate than other tiers of human resources of the health service. This may negatively affect the operational effectiveness of the KSMOH which is responsible of performing all programmatic and departmental operations in the state.

Top management turnover has been shown to be associated with high clinician turnover {17}. When we look at the turnover trends among the three levels (high, middle, and entry level) of managers (Figure 2) the trend-lines (linear regression) are all positive with differing degrees of correlation (R^2 = 0.7710, 0.5214 and 0.169 for the high, middle and baseline levels respectively). The increased trend, in particular for physician managers should be a serious concern for the KSMOH. This increasing turnover among high level managers will likely affect the turnover rates of lower level cadre, and may also lead to poor morale {15}. Prioritizing human resource retention policies and interventions is necessary to stem the outflow of health workers from the public sector.

Doctors as managers: In some national contexts medical professions will defensively protect their role as managers or they may seek to monopolize management roles to advance their own collective interests {16}. Many factors contribute to the overwhelming placement of medical doctors in management roles, including the belief that "Doctor knows best", and doctors collective desire to control both practice and priorities from within. In addition, medical doctors

---

[14] Your Turnover Data is More Than Just a Number retrieved from https://www.hrtools.com/templates/print.aspx?cid=15680 on 12/22/2010.

[15] Martinez J, Martineau T. Rethinking human resources: an agenda for the millennium. Health Policy and Planning 1998;13(4):345-358.

[16] Castle NG, Lin M. Health Care Management Review: April/June 2010 Volume 35 - Issue 2 - pp 161-174

[17] Castle NG. (2005). Turnover begets turnover. Gerontologist, 45(2), 186–195.

may fight the entry of non-doctors as managers as a perceived threat to their clinical authority {18 }.

The "medicalization" of health system management is common in the developing world. Our study found that health management in KSMOH is dominated by medical doctors (80.2% of the top managers). However, these same medical doctors have the highest turnover rate among all cadres. The managers who quit were almost all doctors (82 out of 83), and all of the top managers in this study who left to work abroad were medical doctors. This turnover leads to undue stress and instability in the health system.

Globally, many health organizations have progressively transformed from doctor-led to manager-led systems to improve their management functioning and clinical performance {19}. The Griffiths Report (1983) introduced the concept of general management to the National Health Service (NHS) in the UK with the appointment of a single manager with overall responsibility, at each level within the organization, replacing the previous triumvirate (doctor, nurse, and administrator) and signaling the future drive for close parallels with private and commercial organizations. General managers are empowered for both operational and strategic decision making, freeing the clinicians to perform their clinical tasks better. Dr. Gill Morgan, chief executive of the NHS Confederation described the different but complementary roles of managers and doctors as a means to maximize the potential of their working relationship {19}.

Within the public health community there is a need for public health managers, clinical specialists, and the wider public health workforce to find an intellectual common ground to facilitate consensus toward common work objectives as all have a contribution to make towards improving health services and population health outcomes. Optimal managers are required to operate in a broadly professional, multi-agency environment to be able to achieve the necessary multi-sectoral changes which will benefit the wider population.

Our study reveals that 70% of the doctors stay in their management position 2 years or less, whereas only 25% of health technicians and 48% of other cadres leave as early. Human resource experts advise organizations with high turnover rates to examine and revise their

---

[18] Kirkpatrick I, Dent M, Jespersen PK, Neogy I. Professional Strategies and the New Public Management in Healthcare. Critical Management Studies Conference: CMS5, Manchester 2007.

[19] Interactions between managers, doctors and others. Retrieved on 12/30/2011 from http://www.healthknowledge.org.uk/public-health-textbook/organisation

recruiting processes.{14}. Our study raises questions about the adequacy of KSMOH hiring practices and retention policies for health systems managers.

Quitting vs firing. Voluntary turnover or "quitting", reflects an employee's decision to leave the KSMOH, whereas an instance of health system instigated turnover, or "firing", reflects the KSMOH health system's decision to terminate the employment relationship {20}. Differentiation between voluntary and non-voluntary turnover is lacking in the literature. Generally individual researchers have acknowledged the distinction between voluntary and non-voluntary turnover, but the two types are aggregated in nearly all organizational studies {20}. Treating employees who quit and those who are fired as one group ignores the markedly different etiologies and the effects of these distinct phenomena. In an organization with high attrition rates (due to quitting), employees find it more attractive to leave than to stay {20}. Health professionals have an intention to leave because they are poorly motivated, because of a range of reasons including overburdened workloads, poor remuneration, unsafe work environments and limited opportunities for career advancement.

External vs internal brain drain. This study has discussed both external brain drain problem (managers leave the country to work outside) and internal brain drain (managers leave public sector to work for private/NGOs sector within the country) as problems resulting and possible drivers of health manager turnover. Two main factors drive the very low internal brain drain to NGOs, donors or the private sector in Sudan. First, the private health sector in Sudan is underdeveloped and does not exist outside of the largest urban settings. Second, current laws and regulations allow health managers to work simultaneously in both the public and private sectors. In addition, other studies have found large vertical initiatives such as PEPFAR drive internal brain drain as NGOs increase in scope and size {21}. Although UN agencies are well represented, limited vertical initiatives work in Sudan, possibly further limiting internal brain drain.

This study found clear male gender dominancy and underrepresentation of females (10.3%) in the top management positions in KSMOH. This pattern is not due to paucity of

---

[20] Shaw JD, Delery JE, G. Douglas Jenkins GD, Gupta N. An Organization-Level Analysis of Voluntary and Involuntary Turnover. The Academy of Management Journal Vol. 41, No. 5 (Oct., 1998), pp. 511-525)

[21] Sherr K, Mussa A, Chilundo B, Gimbel S, Pfeiffer J, et al. (2012) Brain Drain and Health Workforce Distortions in Mozambique. PLoS ONE 7(4): e35840. doi:10.1371/journal.pone.0035840.

qualified women in medicine and other health professions in Sudan. Recent surveys performed by HR Department in FMOH revealed that female health workers constituted 52% of health workforce in Sudan {22}. Not enough information was provided by this study to explain this pattern of male-dominated health management; however cultural factors are possible explanation of this pattern and should be explored further.

[22] Federal Ministry of Health. Human resource for Health (HRH) National survey 2010. Khartoum, Sudan.

CONCLUSIONS

A high and increasing turnover rate (TOR) has been observed among the key health managers in KSMOH during the period of study. This high TOR is an alert to the Federal Ministry of Health in Sudan and should receive urgent interventions.

Further study in other states in Sudan, which are poorer and less able to attract staff, will likely demonstrate an even more alarming situation. In order to properly account for this phenomenon the KSMOH should annually measure the TOR as an indicator of health system stability and have this exercise institutionalized within the routine management functions. Complimentary qualitative research examining why managers leave is necessary to understand what is driving these trends and to better facilitate planning and human resource allocation as well as encourage leaders to advocate for policies to improve health manager retention. Doctors were the most unstable health managers in our study. We feel promoting public health-trained professionals as managers in the Ministry of Health will improve the stability of the health system and reduce the health manager turnover rate in Sudan.

RECOMMENDATIONS

- The KSMOH should prioritize interventions targeting staff retention especially of high level managers.
- Strategically, the KSMOH should gradually shift from a doctor-dominated organizational structure towards one with leadership provided by public health-trained managers.
- The KSMOH should carry out qualitative studies to better understand the drivers of rapid turnover problems, and subsequently develop more effective staff retention strategies and interventions.
- Research drivers of inequitable gender distribution of management roles in the health sector. Encourage and provide a conducive work environment for female managers in order to more adequately develop a health care system that meets the needs of women

BIBLIOGRAPHY

Buchan, J. Reviewing the Benefits of Health Workforce Stability. Human Resources for Health 2010 8:29. Retrieved from (http://www.human-resources-health.com/content/8/1/29)

Castle, N. G. (2005). Turnover Begets Turnover. *Gerontologist*, 45(2), 186–195.

Castle, N. G.; & M. Lin. Top Management Turnover and Quality in Nursing Homes. *Health Care Management Review*, April/June 2010 Volume 35 - Issue 2 - pp 161-174.

Dal Poz, M. R., N. Gupta, E. Quain, & A. L. B. Soucat. Handbook on monitoring and evaluation of human resources for health: with special applications for low and middle income countries. WHO Geneva; 2009.

Dambisya, Y. M. The fate and career destinations of doctors who qualified at Uganda's Makerere Medical School in 1984: retrospective cohort study. *BMJ*. 2004 Sep 11;329(7466):600-1.

Dovlo, D., & F. Nyonator. "Migration of Graduates of the University of Ghana Medical School: A Preliminary Rapid Appraisal". *Human Resources for Health Development Journal* (HRDJ), ISSN 0859-8037 Volume 3, Number 1Praboromrajchanok Institute, p34-37. January - April 1999.

Federal Ministry of Health. Human Resource for Health (HRH) National survey 2010. Khartoum, Sudan.

Hagopian, A., A. Zuyderduin, N. Kyobutungi, and & F. Yumkella. Job Satisfaction and Morale in the Ugandan Health Workforce. *Health Affairs*, 28, no.5 (2009):w863-w875. (published online August 6, 2009; 10.1377/hlthaff.28.5.w863)

Interactions between Managers, Doctors and Others. Retrieved on 12/30/2011 from http://www.healthknowledge.org.uk/public-health-textbook/organisation-management/5a-understanding-itd/interactions

Jokhio, A. H., G. Pappas, & R. J. Lancashire. Health System Managerial Staffing Patterns: Public Sector Experience fFrom Pakistan. The Internet Journal of World Health and Societal Politics. 2008 Volume 5 Number 1

Khartoum State Ministry of Health, 2010. Retrieved from (http://www.healthkrt.gov.sd/home.php) on 3/03/2011

Kirkpatrick, I., M. Dent, P. K. Jespersen, & I. Neogy Professional Strategies and the New Public Management in Healthcare. *Critical Management Studies Conference*: CMS5, Manchester 2007.

Martinez J., & T. Martineau. Rethinking Human Resources: An Agenda for the Millennium. *Health Policy and Planning*, 1998;13(4):345-358.

National Census 2008. Central Bureau of Statistics, Sudan. Retrieved from (http://www.cbs.gov.sd/) on 03/01/2011

Ozden, C., Ozden and& M. Schiff (eds.) *International Migration, Remittances and the Brain Drain* (New York: World Bank and Palgrave Macmillan, 2006).

Packer, C., R. Labonté, & D. Spitzer. Globalization and Health Worker Crisis. WHO Commission on Social Determinants of Health Authors:. Globalization and Health Knowledge Network: Research Papers. August, 2007.

Price, M., & R. Weiner. Where Have All the Doctors Gone? Career Choices of Wits Medical Graduates. *S Afr Med J.* 2005 Jun;95(6):414-9.

Shaw, J. D., J. E. Delery, G. D. Jenkins, Jr., & N. Gupta. An Organization-Level Analysis of Voluntary and Involuntary Turnover. *The Academy of Management Journal* Vol. 41, No. 5 (Oct., 1998), pp. 511-525.)

Sherr, K., A. Mussa, B. Chilundo, S. Gimbel, J. Pfeiffer, et al. (2012) Brain Drain and Health Workforce Distortions in Mozambique. *PLoS ONE* 7(4): e35840. doi:10.1371/journal.pone.0035840.

Sullivan, J. 2003. The Right Way to Measure Turnover. Retrieved from (http://www.ere.net/2003/10/06/the-right-way-to-measure-turnover/) on 3/28/2011.

Your Turnover Data is More Than Just a Number retrieved from https://www.hrtools.com/templates/print.aspx?cid=15680 on 12/22/2010.

APPENDIX A.

DATA COLLECTION FORM (SHEET)

To be filled from Khartoum State Ministry of Health (KSMOH) records for all managers who were appointed at the 89 specified positions on 1/1/2005 to 31/12/2010.

For those who are unknown will be contacted and asked the same question as in this form.

Date: ……./……../ …… serial Number ……..……..……
Name of the position: ……..…Gender: Male ☐ Female ☐
Date of posting: ……./……../…… Date of termination:…../……..…/……

1. The posting termination was?
   a. Led by the KSMOH ☐ b. Led by the employer ☐ c. Unknown ☐
   If unknown provide the available contact information:
   i. Name:……..……..……...
   ii. E-mail Address :…….....
   iii. Tel Number : ……..……..…….
2. Where did the candidate go?
   a. Other department within KSMOH ☐ b. Move to in-country Private/NGO ☐
   c. Leave the country ☐ d. Unknown ☐

   If unknown provide the available contact information:
   i. Name: ……..……..……..
   ii. E-mail Address :…….....
   iii. Tel Number : ……..…..…….
3. Graduate degree:
   a. Doctor (MD, Pharmacist, Dentist) ☐
   b. technician (public health, lab, nutritionist and statistician) ☐
   c. Other cadre ☐
4. Post graduate degree:
   a. Yes ☐ b. No ☐

   If yes;
   a. Diploma ☐ b. Master degree ☐ c. Fellowship/MD ☐
   d. PhD ☐
   Other specify:……..
5. Experience working in public health.

   Years……. Months …….

APPENDIX B.
ORAL CONSENT SCRIPT

My name is Mohamed Ali Alamin,
KSMOH employee and MPH student at University of Washington.

- I am conducting a research about the turnover rate of health managers at Khartoum state ministry of Health (KSMOH)
- The study is targeting the health managers who held one of the 89 key positions in KSMOH during the period 1/1/2005 – 12/31/2010. The study is aiming at measuring the turnover rate of key health managers at Khartoum state ministry of Health (KSMOH) and identifying their destination after they left their position. The study is also measuring the association between leaver's characteristics in terms of qualifications and experiences and the destination.
- Your participation in this study is not expected to take more than 10 minutes.
- The only risk is the potential risk to your confidentiality, but I will minimize this risk by storing your data separately from your name.
- All identifiers that link you to the information you will provide is going to be destroyed immediately after completing data collection.
- There will be no expected individual benefits but this study is expected to help KSMOH understand the magnitude of the turnover problem and therefore help setting appropriate interventions and policies to retain the staff.
- You are welcome to ask me any question about the research.
- If you have any question about your rights as a subject, you may contact the Human Subjects Division at the University of Washington, 011-206-543-0098.
- Your participation in this study is voluntary and refusal to participate will involve no penalty or loss of benefits to which you would otherwise be entitled.
- You may discontinue participation at any time without penalty or loss of benefits to which you would otherwise be entitled

You (the subject name) as one of those who are targeted by this study I request your permission to participate in this study.