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# Employees' Assessment of Leadership in a Tertiary Hospital in South-South Nigeria

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KEYWORDS

Leadership, employee, tertiary hospital, Malcolm Baldrige, Nigeria, Africa.

## ABSTRACT

**Background/Objective:**
There is some evidence that weak leadership in health institutions contributes to underutilization of health services, resulting in high levels of morbidities and mortalities. Employee-rated leadership gaps in a hospital, as done in this study, can promote employee engagement in leadership capacity building to achieve improved health services and outcomes. The study's objective was to measure employees' rating of leadership in an hospital and to identify the associated socio-demographic factors.

**Subject and Methods:**
The study was conducted in University of Benin Teaching Hospital, Benin City, Edo State. The design was cross-sectional analytic. Doctors, nurses, pharmacists, laboratory scientists and senior administrative staff were selected by proportionate random sampling as study participants. With the aid of a questionnaire, respondents rated the hospital's leadership, using the six items in the leadership domain of the workforce version of Malcolm Baldrige tool 'Are we making progress?' The responses were tested for association with socio-demographic variables.

**Results:** A total of 268 workers participated in the study. Participants who reported knowledge of the hospital's mission (what it is trying to accomplish) totaled 230 (85.8%), which included a significantly higher proportion (88.3%) of those aged < 40 years (p = 0.009). Participants who agreed that their leaders created a conducive work environment for them totaled 181 (67.9%), which included 77% of nurses (p = 0.013). Only 31.0% of respondents affirmed that the organization sought their opinion.

**Conclusions:**
Most employees rated the leadership positively. Leaders should improve on seeking the opinions of employees. Further studies on this subject are recommended

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## INTRODUCTION

The significant role of leadership in the growth and survival of organizations has given rise to the need for capacity building and further studies on this subject in the health sector. Leadership in the context of total quality management (TQM) has been applied in the health sector.[1,2] Effective leadership, a component of management, is critical in the developing world for the attainment of MDGs through effective utilization of resources.[3,4] Leadership is a key component of health systems strengthening,[5] but a shortage of key critical leadership

skills has been identified in Sub-Saharan African health systems.[6,7] It has been suggested that the panacea to the acute shortage of human resource for health is appropriate and effective leadership.8

Despite its importance, leadership has been identified as one of the most challenging components of health systems to measure and thus the one for which there is little empirical evidence for its impact on health service delivery and outcomes.[9] Nevertheless, some studies offer some insight. In one controlled study in Kenya, a gap in leadership skills in health teams was identified as a factor limiting patient attendance and the range of services rendered in hospitals. The gaps thus contributed to increased morbidity and mortality because health services were underutilised by persons who needed them. Training health teams in leadership resulted in cumulative increases in coverage for selected indicators (childhood immunisation, antenatal care visits, delivery by skilled birth attendants, etc) from a baseline of 38% to an endline of 48% and a further six-month post-intervention level of 51%. The authors suggested that such studies have the potential to provide evidence for interventions that can enhance health leadership, improve healthcare delivery and ultimately improve health outcomes.[9] Egypt's Ministry of Health and Population identified weak leadership as a factor predisposing to low utilisation of family planning services and high levels of maternal deaths. A Leadership Development Programme intervention in which health workers were trained in leadership was undertaken to address these gaps. Results from three districts showed increase in percentage of women visiting health facilities for family planning services by 20%, 36% and 68%. In one governorate, maternal mortality ratio reduced, following the training, from 85.0 per 100,000 live births to 35.5 per 100,000 live births.[10]

It is also necessary to extend leadership studies to employees' rating of leadership in health institutions, in line with TQM's principle of engaging employees in leadership.[2,9] To the best of the authors' knowledge, this study of employee rating of leadership in hospitals is the first to be done in Nigeria. This study is important because it sought to reveal leadership gaps and needs that could inform capacity building in leadership and promote the involvement of employees in improved delivery of health services. It also adds to the literature on health leadership and management in Nigeria.

This study was conducted to measure employees' rating of leadership in an hospital setting and to explore socio-demographic factors that may be associated with their rating.

## METHODS

### Study area

The study was conducted in University of Benin Teaching Hospital (UBTH), Benin City, Edo State, Nigeria. It is a multi-specialty tertiary hospital that also provides primary and secondary health services. It serves as a training institution for a wide range of healthcare professionals at basic and specialty levels. The management team of the hospital is headed by a Chief Medical Director and tenured for four calendar years.

### Study population and sample size

The study population consisted of doctors, nurses, pharmacists, laboratory scientists and senior administrative staff who have being in continuous employment in UBTH for at least 6 months. These categories were decided on because they provide or administratively support core clinical services. The minimum period of 6 months was selected to allow for sufficient time to experience the work environment. Persons who were absent from work or declined consent were excluded from the study.

The minimum sample size for the study was

computed using the formula: $n = Z_{\alpha}^{2}pq/d^{2}$ where n is the minimum sample size, $Z_{\alpha}$ is the standard normal deviate, put at 1.96 at an α of 0.05; p is the highest proportion of a the relevant variable in the population, taken as the highest proportion of hospital employees that knew the organization's mission, 86%;[11] q = 1 – p; and d is the error margin tolerated, put at 5%. After making provision for persons who may not give consent, the minimum sample size was 205.

Sampling method

The total number of eligible participants was 1,941. A sampling fraction of 15% was estimated to exceed the minimum sample size to about 290 employees to be approached for participation. With each employee category as a stratum, proportionate random sampling was employed to select 15% of employees per stratum.

Study tool

Malcolm Baldrige tools, standardised by the US National Institute of Standards and Technology, were originally designed for service quality awards in conventional business organizations. Their use in the health sector is relatively recent.[12] Many health-related publications based on various versions of the Malcolm Baldrige tool are descriptions of procedures used in adapting the tool and assessing its utility.[13-17] Generic versions of the Malcolm Baldrige tool have been used for planning and evaluating health sector agendas in some states and institutions in the US. In an employee rating of leadership in Liberty Healthcare Corporation, 86% and 65% of employees respectively reported that they knew the organizations' mission and that their leaders used the organization's values to guide them. These values increased to 92% and 80% respectively following a six-year intervention.[11] Some surveys used the adapted version of the generic tool. One of such studies was conducted in Shahid Hasheminejad Hospital, a teaching hospital affiliated to Iran University of Medical Sciences. The study showed that, among the domains used in the assessment of the hospital, the rating for the hospital leadership was the lowest, compared to other domains such as patient focus.[18] Neither the generic tool nor its adapted formats are known to have been used in health sector studies in Nigeria.

For this study, a structured questionnaire was developed and self-administered to collect data on independent variables (participants' demographic variables – age, sex, marital status and occupation) and the study's outcome measure.

The outcome measure was participants' rating of the hospital's leadership. The workforce version of the generic Malcolm Bladrige tool, 'Are we making progress?',[19] was designed for employees to assess their organization. The six items in the leadership domain of the tool constituted the outcome variables of this study. The items were as follows: "I know my organization's mission (what it is trying to accomplish)"; "I know my organization's vision (where it is trying to go in the future)"; "my senior (top) leaders use our organization's values to guide us"; "my senior leaders create a work environment that helps me do my job"; "my organization's leaders share information about the organization"; and "my organization asks what I think". The response to each item was elicited using a 5-point Likert scale: strongly disagree, disagree, undecided, agree and strongly agree.

The reliability of the tool was assessed by testing for internal consistency between the 5-point-Likert-scale responses to the six questions constituting the leadership domain. Cronbach's alpha was 0.81, indicating high reliability.

Respondents' comprehension of the tool was ascertained in a pretest conducted with a small number of trainee health workers who were

excluded from the sampling frame, and no adaptation was considered necessary. The validity of the tool was further assessed in two ways. First, the content validity in the Nigerian environment was done by three experts in health management working in different states in Nigeria, two in the academia and one in health administration. Each adjudged the tool to be satisfactory. Secondly, predictive validity, a type of criterion validity, was conducted by computing the positive and negative predictive values of each of the six items (criteria), using the overall outcome measure as the 'gold standard'. Each criterion was dichotomised as described under 'Data analyses'. After allocating whole number incremental scores from 1 to 5 to the respective 5 points on Likert's scale (strongly disagree = 1 to strongly agree = 5), the total score for each of the six items (ranging from 6 to 30) was dichotomised as negative (6 to 20, for strongly disagree to undecided) and positive (21 to 30, for agree and strongly agree). The mean positive predictive value (PPV) was 80.6% and the mean negative predictive value (NPV) 73.6% for the six items. The item "My organization asks what I think" had the highest PPV of 96.4% and the lowest negative predictive value (NPV) of 53.5%. The item "I know my organization's mission (what it is trying to accomplish)" had the lowest PPV of 68.7% while the item "I know my organization's vision (where it is trying to go in the future)" had the highest NPV of 86.2%.

The term 'employee' referred to the staff of the hospital as described under 'study population'. The term 'senior leaders' referred to heads of clinical and administrative departments and divisions, Director of Administration, Chairman, Medical Advisory Committee and his deputy and the Chief Medical Director.

Ethical consideration

Ethical approval for the study was obtained from the institutional ethical review committee and the survey was anonymous to ensure privacy. Individual informed consent was also obtained from each respondent.

Data analysis

Data was initially entered into SPSS version 16. Using this programme, the socio-demographic data were presented in a simple frequency table and the responses to each item for assessing leadership were tabulated against the 5 categories on the Likert scale. The 5 categories were then dichotomized into positive (agree and strongly agree) and negative (strongly disagree, disagree and undecided) responses for each leadership assessment item and cross-tabulated against age, sex, marital status and occupation. Further analysis to test for association was done with the aid of Comapre2 Program in WinPepi version 11.0. For each association, Fisher's exact test was conducted, and odds ratio (OR) and its corresponding Fisher's 95% confidence interval (CI) computed. In the computations of ORs, the null value 1.00 was assigned to the referent category of each variable. Statistically significant association was set at $p < 0.05$ and the exclusion of the null value of 1.00 from the 95% CIs of ORs.

RESULTS

A total of 268 workers participated in the study out of 290 who were initially approached, giving a response proportion of 92.4%. Their mean age was 33.6 (SD, 7.3) years. As shown in Table I, majority of them, 231 (86.2%), were less than 40 years old. Females were 153 (57.1%) and males 115 (42.9%). Doctors, 119 (44.4%), and nurses, 109 (40.7%), were the most frequent occupational groups.

Table II shows the distribution of the participants' responses on a 5-point Likert scale for assessing the hospital's leadership. Majority of the respondents

**Table I: Socio-demographic characteristics of respondents** **N = 268**

| Demographic variables | Frequency (%) |
|---|---|
| **Age group (years)** | |
| 20 – 29 | 80 (29.9) |
| 30 – 39 | 151 (56.3) |
| 40 – 49 | 20 (7.5) |
| 50 – 59 | 17 (6.3) |
| **Sex** | |
| Female | 153 (57.1) |
| Male | 115 (42.9) |
| **Marital Status** | |
| Single | 121 (45.1) |
| Married | 142 (53.0) |
| Separated | 3 (1.2) |
| Divorced | 2 (0.7) |
| **Occupation** | |
| Doctors | 119 (44.4) |
| Nurses | 109 (40.7) |
| Pharmacists | 16 (6.0) |
| Laboratory scientists | 9 (3.4) |
| Administrative staff | 15 (5.5) |

Mean age (SD) = 33.6 (7.3) years

**Table II: Pattern of leadership rating** **N =268**

| Rating criteria | Frequency of rating (%) | | | | |
|---|---|---|---|---|---|
| | **Strongly disagree** | **Disagree** | **Undecided** | **Agree** | **Strongly agree** |
| *"I know my organization's mission (what it is trying to accomplish)"* | 7 (2.6) | 18 (6.7 ) | 13 (4.9) | 169 (63.1) | 61 (22.8) |
| *"I know my organization's vision (where it is trying to go in the future)"* | 5 (1.9) | 25 (9.3) | 28 (10.4) | 165 (61.6) | 45 (16.8) |
| *"My senior (top) leaders use our organization's values to guide us"* | 9 (3.4) | 29 (10.8) | 60 (22.4) | 132 (49.3) | 38 (14.2) |
| *"My senior leaders create a work environment that helps me do my job"* | 6 (2.2) | 35 (13.1) | 46 (17.2) | 129 (48.1) | 52 (19.4) |
| *"My organization's leaders share information about the organization"* | 8 (3.0) | 33 (12.3) | 52 (19.4) | 138 (51.5) | 37 (13.8) |
| *"My organization asks what I think"* | 23 (8.6) | 110 (41.0) | 52 (19.4) | 73 (27.2) | 10 (3.7) |

affirmed that they knew the mission, 230 (85.9%) and vision 210 (78.4%) of the hospital. Less than a third of respondents, 83 (31.0%), affirmed that their leaders sought their opinion.

Table III shows the results of tests of associations between leadership ratings and independent variables. A total of 204 (88.3%) participants aged < 40 years compared to 26 (70.3%) of older participants affirmed that they knew the hospital's mission (p = 0.009). Thirty-one (83.8%) participants aged ≥ 40 years and 139 (60.2%) younger participants endorsed the statement that their top leaders used their organization's values to guide them (p = 0.006). The rating that senior leaders created a conducive work environment was made by 32 (86.5%) participants aged ≥ 40 years, reflecting a higher proportion than the 149 (64.5%) in the younger age group (p = 0.008). As many as 109 (74.1%) ever married participants also affirmed this leadership item compared to 72 (59.5%) singles (p = 0.013). With doctors as the referent category, only nurses demonstrated a significant confidence interval of odds ratio, and this explains the overall statistical significance in the association with occupation (p = 0.013). The rating that the hospital's leaders shared information about the hospital with the workforce was affirmed by 145 (62.8%) participants in the younger age group compared to 30 (81.1%) of those in the older age group (p = 0.040). This assessment was also made by 108 (73.5%) ever married respondents as different from 67 (55.4%) singles (p = 0.003). With doctors as the referent group, nurses were the only group with a significant confidence interval of odds ratio, and this was the main reason for the significant association with occupation (p = 0.005). Only 33 (27.7%) doctors (the referent group) compared to a majority of pharmacists and laboratory scientists as a joint group, 15 (60.0%), affirmed that the hospital's leadership sought their opinion (p = 0.014). No independent variable was found to be significantly associated with participants' self-report of knowledge of the organization's vision.

## DISCUSSION

To the best of the authors' knowledge, this is the first study on workforce assessment of leadership in a Nigerian hospital using the Malcolm Baldrige approach. The evolving use of the tool in health sectors internationally, and the improvement opportunity thereby derived, form a basis for its use in more countries like Nigeria.

Health organizations that receive the Malcolm Baldrige Award in the US are characterised by high proportions of workers knowing the hospital's mission and vision and their leaders guiding them with the hospital's values,[20] as was the case in this study. The 86% and 65% of employees of Liberty Healthcare Corporation who respectively reported knowing the organizations' mission and being guided by the organization's values[11] were very similar to the respective values of 86% and 63% in this study. Comparatively, the findings in the Heath Department of Ottawa County were 76% and 66% respectively.[21] These findings are fundamental and important because when the leadership of a health organization gets workers to focus on its mission, vision and values, it is practising transformational leadership which promotes organizational transformation.[20,22,23] In particular, the workers tend to be highly motivated and committed.[20] Some authors conducted a systematic review to develop a model for transformational change in healthcare systems. The authors posited that the mission, vision and value (culture) of a health institution are among the qualities that must be strategically

engaged in order to drive change, including improved health service delivery.[24] Thus, the triangulation of these organizational qualities must affect both leadership and employees to achieve good management of health institutions.

**Table III: Associations with leadership rating.** **N = 268**

| Variables | Categories | Assessment of leadership | | OR (95% CI) | *p* |
|---|---|---|---|---|---|
| | | Negative in % | Positive in % | | |
| | *"I know my organization's mission (what it is trying to accomplish)"* | | | | |
| | | n = 38 (14.2%) | n = 230 (85.8%) | | |
| Age in years | 20 – 39 | 11.7 | 88.3 | 1.00 | 0.009 |
| | ≥ 40 | 29.7 | 70.3 | 0.31 (0.13 – 0.79) | |
| Sex | Male | 13.7 | 86.3 | 1.00 | 0.860 |
| | Female | 14.8 | 85.2 | 092 (0.43 – 1.96) | |
| Marital status | Single | 15.7 | 84.3 | 1.00 | 0.598 |
| | Ever married | 12.9 | 87.1 | 1.25 (0.59 – 2.65) | |
| Occupation | Doctors | 16.8 | 83.2 | 1.00 | |
| | Nurses | 12.8 | 87.2 | 1.37 (0.62 – 3.11) | |
| | Pharm & lab | 8.0 | 92.0 | 2.32 (0.50 – 21.81) | 0.691 |
| | Admin | 13.3 | 86.7 | 1.31 (0.26 – 12.86) | |
| | *"I know my organization's vision (where it is trying to go in the future)"* | | | | |
| | | n = 58 (21.6%) | n = 210 (78.4%) | | |
| Age in years | 20 – 39 | 19.9 | 80.8 | 1.00 | 0.090 |
| | ≥ 40 | 32.4 | 67.6 | 0.52 (0.23 – 1.22) | |
| Sex | Male | 18.3 | 81.7 | 1.00 | 0.136 |
| | Female | 26.1 | 73.9 | 0.63 (0.34 – 1.19) | |
| Marital status | Single | 27.3 | 72.7 | 1.00 | 0.052 |
| | Ever married | 17.0 | 83.0 | 1.83 (0.98 – 3.45) | |
| Occupation | Doctors | 23.5 | 76.5 | 1.00 | 0.574 |
| | Nurses | 22.9 | 77.1 | 1.03 (0.53 – 2.01) | |
| | Pharm & lab | 12.0 | 88.0 | 2.26 (0.61 – 12.58) | |
| | Admin | 13.3 | 86.7 | 2.00 (0.41 – 19.24) | |
| | *"My senior (top) leaders use our organization's values to guide us"* | | | | |
| | | n = 98 (36.6%) | n = 170 (63.4%) | | |
| Age in years | 20 – 39 | 39.8 | 60.2 | 1.00 | 0.006 |
| | ≥40 | 16.2 | 83.8 | 3.42 (1.33 – 10.39) | |
| Sex | Male | 31.4 | 68.6 | 1.00 | 0.054 |
| | Female | 43.5 | 56.5 | 0.59 (0.35 – 1.01) | |
| Marital status | Single | 33.1 | 66.9 | 1.00 | 0.309 |
| | Ever married | 39.5 | 60.5 | 0.76 (0.44 – 1.29) | |
| Occupation | Doctors | 41.2 | 58.8 | 1.00 | |
| | Nurses | 32.1 | 67.9 | 1.48 (0.83 – 2.65) | |
| | Pharm & lab | 24.0 | 76.0 | 2.22 (0.77 – 7.25) | |
| | Admin | 53.3 | 46.7 | 0.61 (0.18 – 2.08) | |

OR, odds ratio; CI, confidence interval; Pharm, pharmacists; lab, laboratory scientists; Admin, administrative staff

The finding that only about two-thirds of respondents affirmed the statement that their senior leaders created a conducive work environment for them is worrisome as it suggests gaps in the work environment. A very similar percentage, 67%, was found in the Ottawa Health Department survey.[21] Such gaps could include deficiencies in a wide range of activities, devices and systems that should protect the workforce from tangible and psychosocial hazards.[25,26] A study that examined reform stress in the work environment of fourteen behavioural health institutions found that more supportive leadership resulted in an empowering work environment that improved staff retention during reforms.[23] Provision of a conducive work environment has been widely shown to be an important role of an organization's leadership.[25-29]

With only two-thirds of workers affirming that senior leaders shared information about the organization with them and, worse still, less than one-third affirming that the leaders asked for their opinions, it would appear that a wide communication gap exists between employees and management. The findings suggest that the likelihood that workers received information shared by the leadership is twice the likelihood that leadership sought feedback of opinions from the workforce. Workers' opportunity to contribute their ideas to and give feedback on the management of the hospital is therefore limited. In a study that used a Malcolm Baldrige framework, it was similarly found that the lowest proportion of positive rating was for a similar variable on feedback – "senior leaders in my hospital listen to me and care about my concerns."[30] The percentage in that study was 49% compared to 31% in this study. Such low proportions suggest that leadership does not satisfactorily communicate with the workforce, indicating that the workforce makes little input participation in decision-making and relationship building with workforce.[9,31] In a study that assessed the applicability of Baldrige Performance Excellence Program to a radiotherapy programme in Rhode Island Hospital/Brown Alpert Medical School in the US, it was shown that building employee engagement requires a fact-based, knowledge-driven system (partly from employee inputs) that will also enhance leadership effectiveness.[32]

The factors shown to be associated with leadership ratings in this study provide direction for management's intervention. Only limited remarks may be made about individual associations because of insufficient data on associations in the literature. Significant differences in the proportions of occupational groups that gave the respective ratings may reflect unique experiences of those groups relative to others. Doctors were the occupational group with the lowest proportions that reported positive responses in four of the six sub-domains of leadership assessments, especially regarding a conducive work environment and information sharing by senior leaders. With respect to the work environment, authors in a US-based study identified work-related stressors, such as lack of resources and time-constrained patient care, among physicians. Physicians' well-being improved after interventions that included senior-management-supported flexible work schedules and computerization of paper work procedures.[33] Similar leadership-supported studies and interventions are required in the health workforce in Nigeria. It is difficult to explain why variables such as age and marital

status were significantly associated with assessments of leadership, especially when young age and being single, both of which are demographically related, had occasionally reversed patterns in the results. It is possible that there are underlying factors, perhaps outside the work environment, that account for these findings. The findings constitute opportunities for further research.

Despite the strength of this study, it has some limitations. The variables used for rating leadership

were not foolproof. Self-reports of knowledge of organization's mission and vision may have been biased. More work-related independent variables such as timeliness of promotion, rank and duration employment would have provided more robust findings. These gaps should inform the design of future studies.

## CONCLUSION

Most employees gave the hospital's leadership positive rating on all criteria measured, except the request for employees' opinions. Occupational groups, in line with the widely varied proportions that gave the various ratings, probably constitute the most suitable framework for intervention. The hospital's leadership should establish systems that demand for workers' opinions in the running of the hospital. The leadership itself requires continuous capacity building that addresses the leadership gaps identified. Further studies on workers' perception of hospital leadership are required. Research should address the development of tools that would further unbundle the outcome variables in this study, such as specific measures that constitute a conducive work environment. Future studies should also use more work-related independent variables such as income level and

timely promotion. Periodic studies on health facility leadership have the potential to inform interventions that can improve industrial relations, hospital services and health outcomes in the population.

## REFERENCES


1. Weiner BJ, Shortell SM, Alexander J. Promoting clinical involvement in hospital quality improvement efforts: the effects of top management, board, and physician leadership. Health Serv Res 1997; 32:491-510.

2. Adeoti JO. Total quality management (TQM) factors: an empirical study of Kwara State Government hospitals. Ethno Med 2011;5:17-23.

3. Curry L, Taylor L, Chen PG, Bradley E. Experiences of leadership in health care in sub-Saharan Africa. Hum Resour Health 2012;10:33. URL: www.human-resources-health.com/content/10/1/33 Accessed Sep 28th, 2013.

4. Nzinga J, Mbaabu L, English M. Service delivery in Kenyan district hospitals – what can we learn from literature on mid-level managers? Hum Resour Health 2013;11:10. URL: www.human-resources-health.com/content/11/1/10 Accessed Sep 28th, 2013.

5. World Health Organization. Countdown to 2015 decade report (2000–2010): taking stock of maternal, newborn and child survival. 2010. URL: http://www.childinfo.org/files/CountdownReport_2000-2010.pdf Accessed Sep 30th, 2013.

6. Sebudubudu D, Botlhomilwe MZ. The critical role of leadership in Botswana's development: What lessons? Leadership 2012;8:29–45.

7. Pillay R. The skills gap in hospital management: a comparative analysis of hospital managers in the public and private sectors in South Africa. Health Serv Manage Res 2010;23:30–36.

8. O'Neil ML. Human resource leadership: the key to improved results in health. Hum Resour Health 2008;6:10. URL: http://www.human-resources-health.com/content/6/1/10 Accessed Sep 28th, 2013.

9. Seims LRK, Alegre JC, Murei L, Bragar J, Thatte N, Kibunga P, et al. Strengthening management and leadership practices to increase health-service delivery in Kenya: an evidence-based approach. Hum Resour Health 2012;10:25. URL: http://www.human-resources-health.com/content/10/1/25 Accessed Jul 25th, 2013.

10. Topηuoπlu E. Evaluation of the Leadership Development Program for the Ministry of Health and Population, Egypt. Cambridge: Management Sciences for Health; 2003.

11. National Association of Medical Staff Services. Using the Malcolm Baldrige Criteria for performance excellence for organizational self-assessment to improve performance and achieve best practices. NAMSS 35th Annual Conference & Exhibition. Sep 24-28, 2011. Dallas, Texas. URL: http://www.namss.org/Portals/0/Conference_Handouts/2011%20Annual/TU13.pdf Accessed 25th Jan, 2014. Goonan K. Healthcare leaders test a proven business strategy. Qual Saf Health Care 2003;12:477.

12. Foster TC, Johnson JK, Nelson EC, Batalden PB. Using a Malcolm Baldrige framework to understand high-performing clinical microsystems. Qual Safety Health Care. 2007;16:334–341.

13. Sternick ES. Using Baldrige performance

excellence program approaches in the pursuit of radiation oncology quality care, patient satisfaction, and workforce commitment. Front Oncol 2011 Jun 20;1:9. doi: 10.3389/fonc.2011.00009. URL: www.frontiersin.org/Radiation_Oncology/10.3389/fonc.2011.00009 Accessed Sep 30th, 2013.

14. Adair CE. Performance Measurement in Healthcare: Part II – State of the science findings by stage of the performance measurement process. Healthc Policy 2006;2:56-78.

15. Akins RB. A process-centered tool for evaluating patient safety performance and guiding strategic improvement. Adv Patient Saf 2005;4:109-125.

16. Foster DA, Chenoweth J. Comparison of Baldrige Award applicants and recipients with peer hospitals on a National Balanced Scorecard. Thomson Reuters. 2011. URL: http://www.nist.gov/baldrige/upload/baldrige-hospital-research-paper.pdf Accessed Sep 22nd, 2013.

17. Fatehpanah A, Maleki MR, Ranjbar M, Dehnavieh R, Nodoushan IS, Zarezadeh M. Innovation in the application of Malcolm Baldrige Model: using two models (medical & educational) at one hospital. J Community Health Res 2012;1:110-121.

18. National Institute of Standards and Technology. Are We Making Progress? US Department of Commerce. 2011. URL: http://www.nist.gov/baldrige/publications/upload/Progress.pdf Accessed Sep 3rd, 2013.

19. Calhoun GS, Griffith JR, Sinioris ME. The foundation of leadership in Baldrige winning organizations. Bull Natl Center of Healthc Leadersh. Supplement to Mod Healthc 2007;37:9-20.

20. Ottawa County Health Department.

Quality improvement project: overview. 2007. URL: http://www.accreditation.localhealth.net/MLC-2%20website/Ottawa/OCHD%20Showcase%20PPT.pdf Accessed 25th Jan, 2014.

Aarons GA, Sommerfeld DH, Willging CE. The soft underbelly of system change: the role of leadership and organizational climate in turnover during statewide behavioral health reform. Psychol Serv 2011;8:269–281.

21. Al-Mailam FF. Transactional versus transformational style of leadership-employee perception of leadership efficacy in public and private hospitals in Kuwait. Qual Manage Health Care 2004;13:278-284.

22. Kaplan HC, Brady PW, Dritz MC, Hooper DK, Linam WM, Froehle CM, et al. The influence of context on quality improvement success in health care: a systematic review of the literature. Milbank Q 2010;88:500-559.

23. Asuzu MC. Occupational health: a summary introduction and outline of principles. Ibadan:

Afrika-Link Books; 1994.

24. Snashall D. Hazards of work. In: Snashall D, Patel D, editors. ABC of occupational and environmental medicine. 2nd ed. London: BMJ Publishing Group; 2003. p. 1-5.

25. Adisesh A. Occupational health practice. In: Snashall D, Patel D, editors. ABC of Occupational and Environmental Medicine. 2nd ed. London: BMJ Publishing Group; 2003. p. 6-11.

26. Spiegel JM, Lockhart K, Dyck C, Wilson A, O'Hara L, Yassi A. Tool, weapon, or white elephant? A realist analysis of the five phases of a twenty-year programme of occupational health information system implementation in the health sector. BMC Med Inform Decis Mak 2012;12:84. URL: http://www.biomedcentral.com/1472-6947/12/84. Accessed Sep 24th, 2013.

27. Pronovost PJ, Weast B, Holzmueller CG, Rosenstein BJ, Kidwell RP, Haller KB, et al. Evaluation of the culture of safety: survey of clinicians and managers in an academic medical center. Qual Saf Health Care 2003;12:405-410.

28. Lang JE, Hersey JC, Isenberg KL, Lynch CM, Majestic E. Building company health promotion capacity: a unique collaboration between Cargill and the Centers for Disease Control and Prevention. Prev Chronic Dis 2009;6:A62. URL: http://www.cdc.gov/pcd/issues/2009/apr/08_0198.htm. Accessed Sep 24th, 2013.

29. Saviθ BS, Robida A. Capacity of middle management in health-care organizations for working with people – the case of Slovenian hospitals. Hum Resour Health 2013;11:18. URL: www.human-resources-health.com/content/11/1/18 Accessed Sep 30th, 2013.

30. Sternick ES. Using Baldrige performance excellence program approaches in the pursuit of radiation oncology quality care, patient satisfaction, and workforce commitment. Front Oncol 2011 Jun 20;1:9. doi: 10.3389/fonc.2011.00009. URL: www.frontiersin.org/Radiation_Oncology/10.3389/fonc.2011.00009 Accessed Sep 30th, 2013.

31. Dunn PM, Arnetz BB, Christensen JF, Homer L. Meeting the imperative to improve physician well-being: assessment of an innovative program. J Gen Intern Med 2007;22:1544-1552.