# ORIGINAL ARTICLE

## HEALTH WORKER'S COMPETENCE AND PREDICTORS TO LEAD AND MANAGE AND GOVERN HEALTH DELIVERY SYSTEM IN NORTHWEST ETHIOPIA

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## ABSTRACT

*Introduction:* Observing over-led and under-managed, over-managed and under-governed, and over-governed and under-led health delivery systems remain a common phenomenon. A considerable number of countries have launched integrated health system leadership, management, and governance capacity-building programs. However, there has been a dearth of attempts to measure the workforce's competence to lead and manage and govern the health delivery system, particularly in Ethiopia.

*Objective:* The purpose of this study was to determine competence and predictors to lead and manage and govern the health delivery system among the health workforce in Northwest Ethiopia.

*Methods:* A cross-sectional study was carried out. Eight hundred thirteen workforce had participated in the study. Competence to lead and manage and govern the health delivery system was computed from 20 items. Ordinal logistic regression analysis was conducted to identify predictors. Probability value and odds ratio with 95% confidence interval were used to determine statistical significance and strength of association, respectively.

*Results:* Eight hundred thirteen participants were addressed. Of these, 396 (48.7%) were females. The estimates for low, moderate, high, and very high levels of competence to lead and manage and govern the health delivery system were 41.3%; 42.7%; 13.5%, and 2.5%, respectively. Sex and responsibility were identified as main predictors at a probability value of less than 0.05. Being a male workforce was 50.2% (AOR: 1.502 (1.038, 2.173) higher to lead and manage and govern the health delivery system at a very high level of competence compared with those of females. Being head of the office was more than 2 times (AOR: 2.382 (1.155, 4.914) higher to lead and manage and govern the health delivery system at a very high level of competence compared with those of service owners.

*Conclusions:* The competence to lead and manage and govern the health delivery system among the health workforce in Northwest Ethiopia is leveled into four categories: very high, high, moderate and low. Of which, the low and moderate levels accounted for 84% that is inadequate. Policymakers, program planners and implementers need to strengthen investments in integrated health system leadership, management and governance. In reinforcing it, they could give due attention to females and service owners. Future research could be conducted considering hierarchical variables.

*Keywords: Health system, Workforce, Competence, Lead and Manage and Govern, Predictors*

## INTRODUCTION

Observing over-led and under-managed, over-managed and under-governed, and over-governed and under-led health systems remain a common phenomenon (1, 2). This puzzle has been palpated in dealing with the successes, glitches, and trends of health initiatives to ensure universal health coverage.

In driving the Millennium Development Goals, diverse experiences were recorded from countries around the globe (3). Evidences show that many countries had made incredible achievements; some others made optimal improvements and few with little progress. These trends doubted the reachability of the goals at a considerable number of countries. This doubt unduly pressured the globe to sit for a strategy.

Consequently, leadership and governance is identified as one of the health system building blocks (4). Yet, implementing and measuring leadership and governance has remained challenging (5, 6). To overcome such the challenges, integrated Leadership, Management, and Governance (LMG) capacity-building program was developed (5, 7).

This program has been launched in a considerable number of countries (8, 9). The program aims to build the competence of the workforce in influencing people, improving performance, and ensuring societal health and well-being (6). Although integrated LMG has caught the attention of the workforce, particularly in low and middle-income countries' health systems; yet, there has been a dearth of attempts to measure the workforce's competence to lead and manage and govern the health delivery system (8).

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This can be characterized by the inadequate literature that have been conducted to determine the health workforce's competence and its predictors to lead and manage and govern the health delivery system. However, limited studies, though they lacked quantitative results, indicate that the workforces who are competent to lead and manage and govern improve the health service outcomes (1, 9, 10).

Thus, the results of this study would support policymakers, program planners, implementers, and researchers to scheme scientifically reliable and empirically scalable integrated LMG capacity building programs.

## PATIENTS AND METHODS

### Study design and participants
A cross-sectional study was carried out in December 2018. Eight-hundred thirteen health facility workforce were selected, randomly from 32 health facilities located in Amhara Regional State in Northwest Ethiopia.

### Data collection and measurements
Data were collected using a structured multi-item questionnaire. The data collected included the participants' basic characteristics and items that potentially measured competence to lead and manage and govern the health delivery system (dependent variable).

The measuring items were adapted from the Ethiopian hospital leadership, management, and governance implementation checklist; management and organizational sustainability tool; pact organizational capacity assessment tool, and the WHO health governance assessment tool.

The test stimuli (psychometric properties) of the questionnaire was refined through rigorous debriefing sessions, focused on instrument clarity and validity. In this process, five specialists of health service management, of whom three were from civil service and two from the academic spheres were involved.

All of the measuring items were rated with a five-point Likert scale, ranging from 1 = very low to 5 = very high. The data related to measuring items were checked for inter-correlation of 0.3 and greater, intra-item consistency of 0.7 and greater (11), communality of 0.5 and greater (12, 13), and complex structure that is whether any factor had resided on more than one item with factor loadings of 0.4 and greater (14) using factor analysis. In this process, six items were removed from the original dataset.

Of which, two items: looking for best practices and match deeds to words were removed due to violating the rule of communality, and the other four items: set annual and strategic plan, allocate adequate resources, provide accountability and authority, and provide appropriate feedback were removed due to violating the rule of complex structure. It indicated that the dataset was reduced to a 20-item dataset. Yet, the six measuring items trimmed from the original dataset due to violating the rules of communality or complex structure were taken as predictors. This process was discussed elsewhere (15).

### Data analysis
Data were entered using epi-demographic information version 7 and analyzed using statistical package for social science version 20. Texts, tables and figures were used to report results. The dependent variable was computed from the 20-item dataset. The computed variable was leveled into four ordinal categories: low, moderate, high and very high that represented scores of <60, 60-79.99, 80-94.99, and $\geq 95$ respectively. These scales were taken from the Amhara Regional State health workforce performance appraisal guideline, unpublished work.

Ordinal logistic regression analysis with logit link function was used to model the relationship between the dependent variable and its predictors. Model fitting information tested by (-2Log Likelihood) was significant at a probability value (p) <0.001. The consistency of the observed data tested with Pearson chi-square goodness-of-fit remained marvelous with p = 1. The explained variance of the dependent variable from the predictors was tested by pseudo-r-squared value (Nagelkerke's $R^2$=0.765), which indicated a strong association.

The test of parallel lines or testing proportional odds assumption that is testing whether the location parameters (slope coefficients) of predictors were the same across outcome variable categories was tested by (-2Log Likelihood) and became non-significant with p = 0.487. This showed that the slope coefficients were the same across response categories, which justified that there had no evidence to reject the parallelism hypothesis.
The odds ratios together with the corresponding 95% Confidence Intervals (CI) were given as appropriate to better understand the contribution of each predictor.

### Ethical approval

Ethical clearance with a protocol record 090/18-04 was secured from the institutional review board of Bahir Dar University. Each participant provided written consent. The process was strictly anonymous and questionnaires completed were stored in a locked cabinet. Note that this work is an extension of a pre-print manuscript (16).

# RESULTS

### Basic characteristics of participants

**Table 1** presents the participants' basic characteristics. Overall, eight hundred thirteen participants were addressed. Regarding sex, 396(48.7%) were females. Concerning responsibility, 582 (71.6%) were service owners.

### The central tendency of the measuring items

**Table 2** indicates the means and standard deviations of measuring items. This was included to show simply the overall trend of the data set, how the data were spread around it. Other ways it did not provide evidence for a nuanced decision. Accordingly, the highest and lowest mean scores were recorded for the items: determine key priorities for action (3.38±1.097), and describe the outcomes related to the allocated resources (2.76±1.231).

**Table 1:** Basic characteristics of participants (n = 813)

| Variable | Category | Frequency | Percent |
|---|---|---|---|
| Sex | Male | 417 | 51.3 |
| | Female | 396 | 48.7 |
| Age | <= 24 years | 124 | 15.3 |
| | 25-29 years | 334 | 41.1 |
| | 30-34 years | 256 | 31.5 |
| | >34 years | 99 | 12.2 |
| Educational level | Diploma and less | 363 | 44.6 |
| | First degree | 411 | 50.6 |
| | Second degree and above | 39 | 4.8 |
| Responsibility | Head of office | 61 | 7.5 |
| | Process owner | 35 | 4.3 |
| | Unit coordinator | 135 | 16.6 |
| | Service owners | 582 | 71.6 |
| Year of service | <2 years | 209 | 25.7 |
| | 2-4 years | 222 | 27.3 |
| | 5-8 years | 283 | 34.8 |
| | >8 years | 99 | 12.2 |

**Table 2:** Means and standard deviations of measuring items (n = 813)

| | Item | Mean | Standard deviation |
|---|---|---|---|
| 1 | Identify client and stakeholder needs and priorities | 3.35 | 1.103 |
| 2 | Recognize trends, opportunities, and risks | 3.36 | 1.076 |
| 3 | Look for best practices | 3.11 | 1.168 |
| 4 | Articulate the organization's mission, strategy, and vision | 3.33 | 1.103 |
| 5 | Determine key priorities for action | 3.38 | 1.097 |
| 6 | Enlist the stakeholders to commit resources | 2.86 | 1.197 |
| 7 | Unite mobilized resources to reach organizational vision | 2.97 | 1.214 |
| 8 | Match deeds to words | 3.25 | 1.161 |
| 9 | Show trust and confidence and acknowledge contributions | 3.04 | 1.197 |
| 10 | Model of creativity, innovation, and learning | 3.00 | 1.160 |
| 11 | Set annual and strategic plan | 3.32 | 1.165 |
| 12 | Allocate adequate resources | 3.04 | 1.172 |
| 13 | Provide accountability and authority | 3.06 | 1.111 |
| 14 | Considers the organizational lines of authority for delegation | 3.24 | 1.126 |
| 15 | Integrate work structures and workflow | 3.16 | 1.091 |
| 16 | Coordinate practices with other workforce's programs | 3.22 | 1.097 |
| 17 | Monitor their achievements against the plan, and take lessons | 3.20 | 1.136 |
| 18 | Provide appropriate feedback | 3.19 | 1.125 |
| 19 | Uphold ethical and moral integrity to serve the public interest | 3.24 | 1.230 |
| 20 | Establish a consultation mechanism to heard public voice | 2.95 | 1.171 |
| 21 | Ensure the participation of key stakeholders | 2.86 | 1.160 |
| 22 | Establish alliances for joint action at all levels | 2.96 | 1.162 |
| 23 | Oversee a shared direction to achieve organizational mission | 3.10 | 1.240 |
| 24 | Advocate organizational mission and vision to stakeholders | 2.97 | 1.223 |
| 25 | Use resources in a way that maximizes the public well-being | 3.07 | 1.284 |
| 26 | Describe the outcomes related to the allocated resources | 2.76 | 1.231 |

***Competence to lead and manage and govern the health delivery system***

**Figure 1** indicates the health workforce's competence to lead and manage and govern the health delivery

About 41% and 43% of the health workforce had low and moderate levels of competence, respectively. On the other hand, only 2.5% of the work-

**Table 3:** Estimates of predictors fitted to ordinal logistic regression analysis (n = 813)

| Variable | | | | | 95% CI | | | 95% CI | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Lower Bound | Upper Bound | EXP | Lower bound | Upper bound |
| | | | Estimate | Sig. | | | | | |
| Location | Sex | Male | .407 | .031 | .037 | .776 | 1.502 | 1.038 | 2.173 |
| | | Female | 0 | . | . | . | 1 | - | - |
| | Age in years | ≤24 | .359 | .353 | -.398 | 1.115 | 1.432 | .672 | 3.050 |
| | | 25-29 | -.391 | .236 | -1.037 | .256 | .676 | .355 | 1.292 |
| | | 30-34 | -.526 | .110 | -1.171 | .119 | .591 | .310 | 1.126 |
| | | >34 | 0 | . | . | . | 1 | - | - |
| | Educational level | Diploma & below | .731 | .103 | -.147 | 1.609 | 2.077 | .863 | 4.998 |
| | | First degree | .625 | .152 | -.230 | 1.479 | 1.868 | .795 | 4.389 |
| | | Masters & above | 0 | . | . | . | 1 | - | - |
| | Responsibility | Head of office | .868 | .019 | .144 | 1.592 | 2.382 | 1.155 | 4.914 |
| | | Process owner | -.022 | .965 | -1.030 | .985 | .978 | .357 | 2.678 |
| | | Unit coordinator | .445 | .083 | -.058 | .948 | 1.560 | .944 | 2.581 |
| | | Service owner | 0 | . | . | . | 1 | - | - |
| | Service in years | <2 | .577 | .114 | -.138 | 1.292 | 1.781 | .871 | 3.640 |
| | | 2-4 | .548 | .119 | -.142 | 1.238 | 1.730 | .868 | 3.449 |
| | | 5-8 | .392 | .245 | -.269 | 1.053 | 1.480 | .764 | 2.866 |
| | | >8 | 0 | . | . | . | 1 | | |
| | Look for best practices | Very low | -3.531 | .000 | -4.541 | -2.521 | .029 | .011 | .080 |
| | | Low | -2.579 | .000 | -3.356 | -1.802 | .076 | .035 | .165 |
| | | Moderate | -1.602 | .000 | -2.249 | -.954 | .201 | .106 | .385 |
| | | High | -1.278 | .000 | -1.890 | -.667 | .279 | .151 | .513 |
| | | Very high | 0 | . | . | . | 1 | - | - |
| | Match deeds to words | Very low | -2.030 | .000 | -2.963 | -1.097 | .131 | .052 | .334 |
| | | Low | -3.551 | .000 | -4.415 | -2.688 | .029 | .012 | .068 |
| | | Moderate | -1.657 | .000 | -2.270 | -1.044 | .191 | .103 | .352 |
| | | High | -.559 | .049 | -1.116 | -.002 | .572 | .328 | .998 |
| | | Very high | 0 | . | . | . | 1 | - | - |
| | Set anual and strategic plan | Very low | -1.208 | .033 | -2.319 | -.097 | .299 | .098 | .908 |
| | | Low | -1.387 | .001 | -2.179 | -.595 | .250 | .113 | .552 |
| | | Moderate | -1.266 | .000 | -1.891 | -.641 | .282 | .151 | .527 |
| | | High | -.391 | .153 | -.928 | .145 | .676 | .395 | 1.156 |
| | | Very high | 0 | . | . | . | 1 | - | - |
| | Allocate adequate resources | Very low | -.469 | .365 | -1.485 | .546 | .626 | .227 | 1.726 |
| | | Low | -1.227 | .002 | -2.010 | -.444 | .293 | .134 | .641 |
| | | Moderate | -.584 | .104 | -1.289 | .120 | .558 | .276 | 1.127 |
| | | High | -.919 | .006 | -1.575 | -.262 | .399 | .207 | .770 |
| | | Very high | 0 | . | . | . | 1 | - | - |
| | Provide accountability and authority | Very low | -2.877 | .000 | -4.085 | -1.669 | .056 | .017 | .188 |
| | | Low | -2.415 | .000 | -3.279 | -1.552 | .089 | .038 | .212 |
| | | Moderate | -1.791 | .000 | -2.522 | -1.059 | .167 | .080 | .347 |
| | | High | -.921 | .007 | -1.591 | -.252 | .398 | .204 | .777 |
| | | Very high | 0 | . | . | . | 1 | - | - |
| | Provide appropriate feedback | Very low | -4.490 | .000 | -5.947 | -3.033 | .011 | .003 | .048 |
| | | Low | -4.069 | .000 | -4.960 | -3.177 | .017 | .007 | .042 |
| | | Moderate | -2.383 | .000 | -3.078 | -1.687 | .092 | .046 | .185 |
| | | High | -1.381 | .000 | -2.001 | -.761 | .251 | .135 | .467 |
| | | Very high | 0 | . | . | . | 1 | - | - |
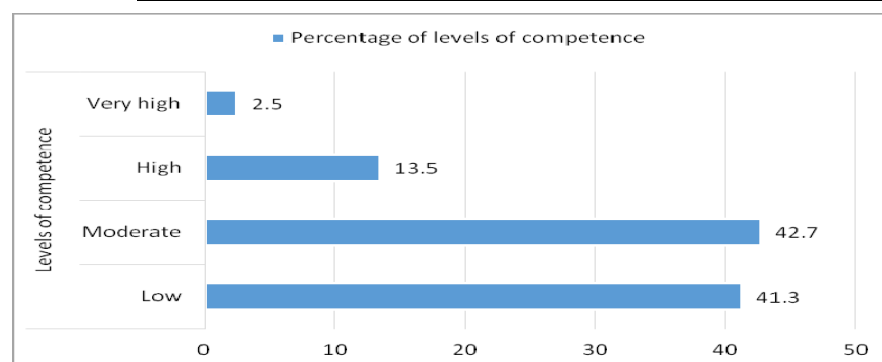


**Figure 1:** Competence to lead and manage and govern the health delivery system

*Predictors of competence to lead and manage and govern the health delivery system*

**Table 3** displays the estimated coefficients of the ordinal logistic regression model. The estimates labeled "location" were the coefficients (odds) of the predictors. To interpret the impact of individual predictors in a better way, proportional odds ratio with 95% CI was calculated by coefficient exponentiation, which was indicated in the exponential (EXP) column of the table.

From the observed significance levels: sex and responsibility (working position) were significantly related ($P<0.05$) to the competence to lead and manage and govern. The odds ratio of the male health workforce was 1.502 (95% CI, 1.038 to 2.173). This showed that being male workforce was 50.2% higher to lead and manage and govern the health delivery system at a very high level of competence compared with those of females ($p = 0.031$).

The odds ratio of the head of the office was 2.382 (95% CI, 1.155 to 4.914). This indicates that being the head of the office was more than 2 times higher to lead and manage and govern the health delivery system at a very high level of competence compared with those of service owners ($p = 0.019$).

Note that all the six items that were trimmed from the measurement model (15) and treated as predictors were also significantly related to this competence ($p<0.05$). For instance, the odds ratio of the health workforce who had a very low rate of 'look for best practices' was 0.029 (95% CI, 0.011 to 0.080). This revealed that the very low rate of 'look for best practices' reduced the workforce's higher level of competence to lead and manage and govern the health delivery system by 97.1% compared with the very high rate of it ($P < 0.001$).

## DISCUSSION

The health workforce's competence to lead and manage and govern the health delivery system in the current study is leveled into four categories: very high, high, moderate and low. Of which, the low and moderate levels accounted for 84%. As the best of the investigators' knowledge, no previous study attempted to determine it, however, most of them reported that a competent workforce in this regard improves the health service outcomes (1, 9, 10, 17-19). The potential reason might be the presence of significant duplication and overlap between the practices of the three paths (6, 18). Hence, the current study measures the health workforce's competence to lead and manage and govern the health delivery system (2) after developing a four-factor measurement model (detailed elsewhere) using a theoretically reasonable analysis technique, that is, factor analysis that overcomes the issue of duplication and overlap (20).

Alongside determining such a competence, identifying its predictors using a scientifically reliable and empirically scalable model is also helpful. Particularly, it is valuable when one wishes to design a characteristic-based integrated LMG capacity-building program. In the current study, sex and responsibility are identified as the main statistically significant predictors ($p<.05$).

Regarding sex, being a male workforce has a higher competence to lead and manage and govern the health delivery system. This deviation could be due to the limited number of females that are authorized to lead and manage and govern the health delivery system. In Ethiopia, this has a historical trend, in which breaking it and bringing adequate number of females to the stage is a troublesome investment. However, almost half of the participants in this study are females, which indicates that a considerable number of workforces in the health delivery system are females. Thus, whatever reasons people have, without empowering half of the segment of the workforce, getting organizations to the intended stage would be rather difficult.

Concerning responsibility (working position), being the head of the office has more than two-fold higher competence compared with the service owners. The reason behind could be that the service owners may not have training or have limited training in the field that makes them incompetent of leading. This point that there is huge need to invest on integrated LMG to service owners who account for almost three-fourth of the workforce. The other significantly associated predictors ($p<.05$) are the six measuring items trimmed from the original dataset (15) due to violating the rules of communality or complex structure (14) and taken as predictors. These include: (i) Looking for best practices, (ii) Match deeds to words, (iii) Set an annual and strategic plan, (iv) Allocate adequate resources, (v) Provide accountability and authority, and (vi) Provide appropriate feedback.

Yet, their relationship with competence to lead and manage and govern the health delivery system implies that while scheming capacity-building policies and strategies, as well as, designing further research; considering them as measuring items would be more meaningful than taking them as predictors. Away from all the implications, interpreting results with caution is important due to there might have been some information bias. The limitation of excluding the health workforce that took integrated LMG capacity building training so far might also deviate the results.

*Conclusions*

The competence to lead and manage and govern the health delivery system among the health workforce in Northwest Ethiopia is leveled into four categories: very high, high, moderate and low. Of which, the low and moderate levels accounted for 84%. This shows the inadequacy of the health workforce competence in this regard. Sex and responsibility are identified as the main statistically significant predictors.

The policymakers, program planners and implementers need to strengthen the investments on integrated health system leadership, management and governance. In reinforcing it, they could give due attention to females and service owners.

Results can be also considered in similar settings. Feature research could be conducted considering hierarchical variables.

## ACKNOWLEDGEMENT

*Competing Interest*

The authors declare that this manuscript was approved by all authors in its current form and that no competing interest exists.

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