Key factors influencing motivation among health extension workers and health care professionals in four regions of Ethiopia: a cross-sectional study

Mehiret Abate Adillo（✉ mabate@ihi.org ）

Institute for Healthcare Improvement   https://orcid.org/0000-0003-4514-6663

Zewdie Mulissa

Institute for healthcare improvement

Befikadu Bitewulign Desta

Institute for Healthcare Improvement

Abiyou Kiflie Alemayehu

Institute for Healthcare Improvement

Abera Biadgo Kefale

Institute for Healthcare Improvement

Dorka woldesenbet Keraga

Addis Ababa University School of Public Health

Haregeweyni Alemu Gebreselassie

Institute for Healthcare Improvement

Yakob Seman Ahmed

Ethiopia Ministry of Health

Abiy Seifu Estifanos

Addis Ababa University School of Public Health

Hema Magge

Institute for Healthcare Improvement

Gareth Parry

Institute for Healthcare Improvement

Matthew Quaife

London School of Hygiene and Tropical Medicine

Abstract

Background: Although Ethiopia has improved access to health care in recent years, quality of care remains low. Health worker motivation is an important determinant of performance and affects quality of care. This study explores the level and construction of motivation among health extension workers (HEWs) and health care professionals in Ethiopia in baseline data collection of an evaluation of a quality improvement program run by the Institute of Healthcare Improvement (IHI).

Methods: We conducted face to face quantitative surveys with providers to elicit motivation level and construction. We sampled 401 health system workers: skilled providers including nurses and midwives (n=110), HEWs (n=210), and non-patient facing health system staff (n=81). Participants completed a 30-item Likert scale ranking tool which asked questions across 17 domains. We used exploratory factor analysis to explore motivation construction, and ordinary least squares (OLS) regression to explore determinants of motivation level and construction.

Results: Of the 397 interviewees with complete data, 61% (95% CI 56%-66%) self-reported motivation as "very good" or "excellent". Significant variation in motivation was seen across regions with Southern Nations Nationalities and People's Region (SNNPR) being significantly lower score on the Likert scale by 0.35 points (P=0.003). Those who had a medium workload were significantly less motivated compared to participants with a light workload by 0.48 Likert points (P=0.024). The exploratory factor analysis identified a three-factor model to best fit with factors described as: personal and altruistic goals; pride and personal satisfaction; and recognition and support. Personal and altruistic goals varied across regions with Oromia and SNNPR being significantly lower by 0.13 (P=0.018) and 0.12 Likert points (P=0.039) respectively. A regression analysis found that as job satisfaction increased by 1 personal and altruistic goal, increased by 0.34 (P=0.001). Pride and personal satisfaction scores vary among regions with SNNPR being significantly lower by 0.11 Likert points (P=0.051) as compared to Amhara region. Recognition support was significantly higher in health care providers relative to HEWs by 0.12 Likert point (P=0.053).

Conclusions: Overall, motivation was high among participants and varied across region, cadre, and age. Workload, leave, and job satisfaction were associated factors with motivation.

Background

Health worker motivation is an important determinant of health worker performance and, ultimately, health care quality(1,2). Although a range of factors affect health care quality, motivation is an important determinant of health worker effort, retention, and quality of provision in addition to health care organization, resource availability, and other provider and patient personnel (2). Motivation in the work context can be defined as an individual's degree of willingness to exert and maintain an effort towards organizational goals(3). Previous research has identified a number of factors that can affect health worker motivation, which can be broadly categorized in to three areas: social factors such as community

expectations and social values; organizational factors such as resources and managerial support; and individual or process factors such as preferences or intrinsic attitudes (4).

Several comparable studies have been conducted in sub Saharan Africa. A study in Tanzania indicated that 45% of the individuals working in a primary health care unit were unsatisfied with their job. The reasons cited for dissatisfaction were low salaries, factors related to the working environment, and inadequate facilities for performing expected tasks (5). A systematic review to assess motivation and retention of health care workers in developing countries indicated the importance of financial incentive on health workers motivation. The studies indicated that health workers take pride and are motivated when they feel they have the opportunity to progress. Recognition by the employer and community was one of the most motivating factors for health workers alongside education and training opportunities. Low salaries were demotivating factors for health care provider (4,6,7–12)

Three previous studies have assessed health worker motivation in Ethiopia quantitatively, though all were small in scale and focused on specific health worker cadres (13,14). A study conducted in central Ethiopia revealed that the overall motivation of health professionals working in different hospitals of West Shewa Zone was reasonably high. Motivation was affected by financial incentives. The mean motivation score among health professional who received monthly financial benefit was significantly higher than those who did not. Health professionals who had master's degrees and doctors had highest motivation. Professionals who worked for less than five year had less motivation (13). A study done in public hospitals of West Amhara in Northwest Ethiopia revealed that the mean overall motivation scores were similarly high. Highly trained professionals, young age groups, and professionals who received performance evaluations and professional development promotions were more motivated (14).

However, health care professionals' motivation working in public health centres in Gedeo Zone SNNPR was very low. Lack of recognition and appreciation from their immediate supervisor or manager decreased their motivation. Work experience was a positive predictor of job motivation--as work experience increased, job motivation increased (6). A qualitative study indicated that Ethiopian primary health care workers commonly face work-related stress and experience features of burnout, which may contribute to the high turnover of staff and dissatisfaction of both patients and providers (15).

This study explores health worker motivation in Ethiopia. We collected data from the four regions of Ethiopia, home to 70% of the country's population: Amhara; Oromia; Southern Nations, Nationalities and People's Region (SNNPR); and Tigray.

Though research has been done to identify factors associated with motivation in public hospitals and health centers in different regions of Ethiopia, there has been limited research conducted to explore the extent of motivation among HEWs working in the community and health care professionals across the four large regions of Ethiopia or how motivation differs across cadres and regions. This study sought to determine the extent of health professionals' motivation and the factors that influence motivation.

Methods

Tool development

We adapted a motivation tool developed and validated among community health workers in Uganda (16), making minor changes to wording to suit the Ethiopian context. The tool consisted of 17 questions. We added 8 additional questions from a health worker motivation evaluation conducted in Tanzania to explore extrinsic motivating factors in more depth. Finally, we included 5 further questions relating to activities related to the quality improvement programme being implemented in our sample. The final tool is shown in Table 1.

Sampling and data collection

We conducted a cross-sectional survey from April 15 to May 10, 2018. The survey was part of a baseline evaluation of a quality improvement (QI) program delivered by the Institute for Healthcare Improvement (IHI) in partnership with the Ministry of Health-Ethiopia (MOH). Although the sampling frame of this study is based on the IHI program, data are from pre-intervention baseline data collection, and we do not expect motivation to have been influenced by the intervention. The IHI program was implemented in 19 woredas: 7 in Oromia, 5 in Amhara, 5 in SNNPR, and 2 in Tigray. Using a random number generator, we randomly selected one intervention woreda from each region (Jimma Town, Wogera, Chena, and Degua Temben respectively). We added one additional randomly selected woreda in Amhara because Wogera would not have yielded 50 eligible respondents—our target for each region. We further purposively sampled two additional woredas from Oromia and SNNPR (Bunno Bedelle and Chencha respectively) where qualitative evaluative work was also taking place, in order to triangulate findings in a larger evaluation of IHI's QI program. Data collection was conducted by seven research assistants who received one week's training at the start of the data collection process and then were matched to their home regions to assist with community entry and mitigate language issues. The data quality was assured by using validated tools, data collectors were trained, and the interviews were conducted in the local languages.

In each woreda, we mapped the hospital, all health centres and health posts, and approached the woreda health office for permission letters. In each hospital and health centre, we obtained a list of all eligible health care professionals and HEWs. We then randomly selected participants for interviews. In each woreda, we interviewed around 30 participants across a range of health worker and management cadres, including the heads or clinical directors of the woreda, each hospital, and each health centre. We interviewed around four maternal and child health care providers from the hospitals and two from each health centre, and around five HEWs from each health centre.

In each hospital or health centre, we obtained a list of all eligible MNH providers and randomly selected participants for interviews. Their names were written in alphabetical order next to a column of randomly generated numbers and interviewers sequentially chose participants from the smallest random number upwards until the requisite number of participants was reached. If participants were not available, we

sought to arrange interviews via phone and returned to the facility up to three times before classifying them as unreachable and selecting the next worker from the list. Data were entered on tablet computers using Open Data Kit software (www.opendatakit.org) and exported to STATA V.13.

Data Analysis

We used items from the survey to identify factors that make up the construct of motivation. We undertook an exploratory factor analysis to assess whether variation in overall motivation is associated with a number of demographic and structural factors including gender, location, cadre, age, perceived gross salary, work experience etc.

First, motivation level was assessed by analyzing categorial responses to the question "How would you rate your overall motivation at your current work?" The categorical responses were excellent (5), very good (4), good (3), fair (2), and poor (1). This variable was set as a continuous dependent variable in ordinary least squared (OLS) regression to explore determinants of motivation level. Univariate and multivariate regressions were run, normality assumptions were checked by Schapiro - Francia W tests, and variance inflation factor estimates were generated for regressors. Average job satisfaction was assessed by analysing categorical responses ranging from most satisfied with their job (1) to least satisfied (5).

For the exploratory factor analysis, we first removed items from our list of 30 questions which had poor psychometric performance, removing items which had more than 10% missing data, items which were given the same score of by over 80% of participants, and items which did not load on any factors up to a level of 0.4 in initial factor analysis. We used a threshold of 0.4 to assume a strong relationship with a factor, and the optimal number of factors was established through a Scree test and multiple runs (17–19). We used maximum likelihood ProMax oblique rotation to reduce the number of variables with high loadings and to allow factors to be correlated. Construct validity was indicated by loading at least three items per factor and absence of substantive cross-loading.

Results

Sociodemographic characteristics

Of 401 people surveyed, 397 (99%) responded. The majority of the respondents were between 25-30 years of age (232, 58%) and female (290, 73%). Fifty-one percent of respondents had greater than 4 years of work experience, and 52% of the respondents were HEWs (Table 2). Figure 1 plots the responses to each motivational task, where 1 represents "strongly agree" and 5 represents "strongly disagree", and blue dots represent items where a lower score is *a priori* better (e.g. "I am respected in my community for the work I do") and red dots where a lower score is worse (e.g. "I intend to stop working in this role in the next 12 months").

Motivation level

Of the total respondents, 61% were motivated, responding "very good" or "excellent" (95% CI 57% - 66%). The most motivating factor mentioned by 70% of the participants was the opportunity to improve health. The most demotivating factor mentioned by 29% participants was workload.

Motivation construction – Exploratory factor analysis

We ran a factor analyses between one and five factors, and ultimately found that the three-factor model fit the data best. We removed 11 items which did not load to 0.4 on any factor. We calculated the final factor score by multiplying the items by the factor score and summing. Table 3 shows the factor loadings. In addition to the factor loading above 0.4, we used eigenvalues >1 as a criterion to reduce the number of factors into three. We labelled the three factors as personal and altruistic goals; pride and personal satisfaction; and recognition and support. The minimum and maximum score for personal and altruistic goals was 1 and 4.85; for pride and personal satisfaction it was 1 and 4.17; and for recognition and support, it was 1 and 4.5.

Factors related to overall motivation

Table 4 shows the results of the regression model with overall motivation as the outcome variable and a number of explanatory factors fitted.

The overall motivation score mean was 2.18 out of 5 (95% CI 2.1, 2.27; P=0.001). Job satisfaction was associated with overall motivation, where an increase of 1 in job satisfaction was associated with an increase in motivation of 0.23 Likert points (95% CI 0.13, 0.34; P=0.001). We found variation in motivation across regions, where participants from SNNPR reported lower motivation than the Amhara region by 0.35 Likert points (95% CI 0.12, 0.59; P=0.003). Participants who have a medium workload (meaning that they have enough time to complete duties) were also less motivated than participants who have a light workload by 0.48 Likert points (95% CI -0.90, -0.06; P=0.024), though high workload was not significantly different. There was no significant variation in overall motivation job title and perceived gross salary.

Factor 1: Personal and altruistic goals

The first factor identified items which related to personal success and goal setting and altruism. We refer to this factor as "personal and altruistic goals". The mean response for personal and altruistic goals was 1.6 Likert points (95% CI 1.6, 1.7). From the results of the regression analysis summarized in Table 5, an increase in 1 in job satisfaction was associated with an increase in personal and altruistic goals score of 0.34 Likert points (95% CI 0.29, 0.39; P<0.001). Variation in personal and altruistic goals was seen among regions, where participants from Oromia and SNNPR had lower personal and altruistic goal scores than

Amhara region by 0.13 Likert points (95% CI -0.25, -0.02; P=0.018) and 0.12 Likert points (95% CI -0.23, -0.01; P=0.039) respectively. Annual leave (time out of work) was another significant factor associated with personal and altruistic goals, where an increase of 1 was associated with a decrease in personal and altruistic goals of 0.08 Likert points (95% CI -0.12, -0.04; P=0.001). Age, gender and perceived salary fair had no significant association with personal and altruistic goals.

Factor 2: Pride and personal satisfaction

The second factor consisted of variables relating to the pride and personal satisfaction respondents experienced in their jobs, and the satisfaction their jobs gave them. The mean score of pride and personal satisfaction was 1.78 Likert points (95% CI 1.72, 1.84). A regression analysis in table 6 indicated that pride and personal satisfaction score vary among regions with SNNPR being significantly low by 0.11 Likert points (95% CI -0.22, 0.001; P=0.051) as compared to Amhara region. Likewise, as leave (time out of work) increased by 1, pride and personal satisfaction score decreased by 0.06 Likert points (95% CI -0.1, -0.02; P=0.003). Age was significantly associated with pride and personal satisfaction. There were significantly high scores among those older than 30 years old by 0.14 Likert points (95% CI 0.01, 0.28; P=0.049) as compared to those between the ages of18-24 years old. Another factor affecting pride and personal satisfaction was job satisfaction. As job satisfaction increased by 1, pride and personal satisfaction score increased by 0.55 Likert points (95% CI 0.50, 0.60; P=0.001). Gender and work experience did not have significant association with pride and personal satisfaction.

Factor 3: Recognition and Support

Factor 3 synthesised survey items focusing on the recognition and support that participants received from colleagues and seniors. The mean score of recognition and support was 1.8 (95% CI 1.7, 1.8; P=0.001). From the regression analysis indicated in Table 7, factors associated with recognition and support were job title, region, leave (time out of work) and job satisfaction. Recognition and support scores were significantly high among health care providers as compared to HEWs by 0.12 Likert points (95% CI 0.001, 0.25; P=0.053). Compared to Amhara region, recognition and support scores were significantly low among SNNPR by 0.15 Likert points (95% CI -0.32, -0.03; P=0.017) and Oromia region by 0.17 Likert points (95% CI -0.29, -0.01; P=0.034). Another factor affecting recognition and support scores was job satisfaction. As job satisfaction increased by 1, recognition and support score increased by 0.35 Likert points (95% CI 0.29, 0.41; P=0.001). However, as average leave days increased by one, recognition and support scores significantly decreased by 0.09 Likert points (95% CI -0.14, -0.04; P=0.001). Age, work experience, gender and perception of fair salary has no significant association with recognition and support.

Discussion

The extent of overall motivation in respondents across regions and cadres was generally high, but with some variation across regions and other characteristics. The motivation domains identified in a three-factor factor analysis were effort in personal and altruistic goals; pride and personal satisfaction; and recognition (financial and managerial) support.

Our finding of high overall motivation is consistent with several other studies. For example, a study conducted in West Amhara in Northwest Ethiopia showed that 59% of care providers working in hospitals were motivated. In West Shewa Zone Oromia region, the overall mean motivation score of health professionals from three hospitals was 63.6 % (13,14). In this study, motivation varied significantly from region to region, which previous smaller studies have not been able to explore. This variation is consistent with a study from Kenya that also found motivational factors varied from region to region (9). SNNPR had the lowest motivation, consistent with a study done among health professionals in SNNPR Gedeo zone only where only 17% of respondents were highly motivated. This could be due to limited management and financial support of the health professionals at different work level in health sectors (6–12).

Personal and altruistic goals of health providers were significantly lower among participants from Oromia and SNNPR compared to those from the Amhara region. When average job satisfaction increases, efforts in personal and altruistic goal increases. This study was consistent with studies from Central Ethiopia and South Ethiopia where age was a major predictor of motivation: as age increased, motivation to do their job increased (21).

Motivation related to pride and personal satisfaction was significantly high among participants older than 30 years of age as compared to those 24 years and younger. Similar studies in Burkina Faso, Tanzania, and Ghana showed that age has a significant effect on motivation (22,23). Pride and personal satisfaction was significantly high among participants whose job satisfaction was high.

Recognition and support was significantly low among participants from SNNPR and Oromia region and was associated with low motivation. This could be due to instability within the system or the lack of capacity to supervise the health care workers located in a large geographical area. Among participants, average leave and high recognition support was significantly low. This may explain why participants who were taking leave more were less motivated. Recognition and support was significantly higher among health care providers than among HEWs. Having more recognition (financial and managerial) support was a positive predictor for job satisfaction. The same is true in studies in Iran (24,25).

A strength of this study was that data was collected from four major regions of Ethiopia where most of the country's population lives. Nevertheless, limitations remain. Motivation was self-reported and may therefore be subject to acceptability biases in the face-to-face interviews conducted. Knowledge that interviews were conducted by interviewers from a public university and evaluating an IHI programme may have biased responses. The skilled care provider sample was too small to conduct a subgroup analysis among specific groups of interest such as doctors or midwives. Qualitative work could have been conducted alongside quantitative data collection to understand why variation exists in motivation

between regions and personal characteristics. Finally, we were unable to assess the link between health worker motivation and the quality of care provided which remains under-researched.

Conclusions

Motivation was high among the respondents from the four regions. Key factors associated with motivation were region, age, cadre, work experience, workload, job satisfaction, long leave days and work experience.

Abbreviations

IHI **-** Institute for Healthcare Improvement

HEW - Health Extension Workers

OLS - Ordinary Least Squared

MOH - Ministry of health

SNNPR - Southern Nations, Nationalities and People's Region

MNH - Maternal and Newborn health

QI - Quality improvement

Declarations

References

1. Franco LM, Bennett S, Kanfer R. Health sector reform and public sector health worker motivation: a conceptual framework. Social Science & Medicine. 2002 Apr;54(8):1255–66.

2. Mosadeghrad AM. Factors Influencing Healthcare Service Quality. International Journal of Health Policy and Management. 2014;3(2):77–89.

3. Lai ER. Motivation: A literature review. :44.

4. Franco LM, Bennett S, Kanfer R, Stubblebine P. Determinants and consequences of health worker motivation in hospitals in Jordan and Georgia. Soc Sci Med. 2004 Jan;58(2):343–55.

5. Health worker motivation in the context of HIV care and treatment challenges in Mbeya Region, Tanzania: A qualitative study [Internet]. [cited 2018 Aug 24]. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3214153/

6. Berhanu N, Ereso BM, Nebeb GT. Job Motivation and Associated Factors Among Health Care Professionals Working in Public Health Facilities of Gedeo Zone, Southern Ethiopia. Clinical Medicine Research. 2017 Feb 28;6(1):9.

7. Negussie N. Relationship Between Rewards and Nurses' Work Motivation in Addis Ababa Hospitals. Ethiop J Health Sci. 2012 Jul;22(2):107–12.

8. Willis-Shattuck M, Bidwell P, Thomas S, Wyness L, Blaauw D, Ditlopo P. Motivation and retention of health workers in developing countries: a systematic review. BMC Health Serv Res. 2008 Dec 4;8:247.

9. Ojakaa D, Olango S, Jarvis J. Factors affecting motivation and retention of primary health care workers in three disparate regions in Kenya. Human Resources for Health. 2014 Jun 6;12(1):33.

10. Beyene W. Work Motivation and Factors affecting it among Health Professionals in West Shoa Zone Public Hospitals, Oromia Region, Central Ethiopia. Ethiop J Health Sci. 2015 Jul 1;25:231–42.

11. Mbindyo P, Gilson L, Blaauw D, English M. Contextual influences on health worker motivation in district hospitals in Kenya. Implementation Science [Internet]. 2009 Dec [cited 2018 Sep 15];4(1). Available from: http://implementationscience.biomedcentral.com/articles/10.1186/1748-5908-4-43

12. Lunenburg FC. Self-Efficacy in the Workplace: Implications for Motivation and Performance. :6.

13. Dagne T, Beyene W, Berhanu N. Motivation and Factors Affecting It among Health Professionals in the Public Hospitals, Central Ethiopia. Ethiopian Journal of Health Sciences. 2015 Jul 27;25(3):231.

14. Weldegebriel Z, Ejigu Y, Weldegebreal F, Woldie M. Motivation of health workers and associated factors in public hospitals of West Amhara, Northwest Ethiopia. Patient Preference and Adherence. 2016 Feb;159.

15. Selamu M, Thornicroft G, Fekadu A, Hanlon C. Conceptualisation of job-related wellbeing, stress and burnout among healthcare workers in rural Ethiopia: a qualitative study. BMC Health Services Research [Internet]. 2017 Dec [cited 2018 Sep 15];17(1). Available from: http://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-017-2370-5

16. Strachan DL, Källander K, Nakirunda M, Ndima S, Muiambo A, Hill Z, et al. Using theory and formative research to design interventions to improve community health worker motivation, retention and performance in Mozambique and Uganda. Hum Resour Health. 2015 Apr 30;13:25.

17. Ferguson, E. and T. Cox,. Exploratory factor analysis: A users' guide. International journal of selection and assessment. 1993;1(2):84–94.

18. Hilari, K. et. al. Stroke and aphasia quality of life scale-39 (SAQOL-39) evaluation of acceptability, reliability, and validity. Stroke, . 2003;34(8):1944–50.

19. Chandler, C.I., et al., Motivation, money and respect: a mixed-method study of Tanzanian non-physician clinicians. Social science & medicine, 2009. 68(11):

20. Deriba BK, Sinke SO, Ereso BM, Badacho AS. Health professionals' job satisfaction and associated factors at public health centers in West Ethiopia. Human Resources for Health [Internet]. 2017 Dec [cited 2018 Sep 15];15(1). Available from: http://human-resources-health.biomedcentral.com/articles/10.1186/s12960-017-0206-3

21. Prytherch H, Leshabari MT, Wiskow C, Aninanya GA, Kakoko DCV, Kagoné M, et al. The challenges of developing an instrument to assess health provider motivation at primary care level in rural Burkina Faso, Ghana and Tanzania. Global Health Action. 2012 Dec;5(1):19120.

22. Mutale W, Ayles H, Bond V, Mwanamwenge MT, Balabanova D. Measuring health workers' motivation in rural health facilities: baseline results from three study districts in Zambia. Human Resources for Health [Internet]. 2013 Dec [cited 2019 Mar 27];11(1). Available from: https://human-resources-health.biomedcentral.com/articles/10.1186/1478-4491-11-8

23. Daneshkohan A, Zarei E, Mansouri T, Maajani K, Ghasemi MS, Rezaeian M. Factors Affecting Job Motivation among Health Workers: A Study From Iran. Global Journal of Health Science. 2015;7(3):8.

24. Deschamps C, Rinfret N, Lagacé MC, Privé C. Transformational Leadership and Change: How Leaders Influence Their Followers' Motivation Through Organizational Justice. J Healthc Manag. 2016 Jun;61(3):194–213.

Tables

Table 1: Motivation questions included in survey

Domain	Wording	Source
Altriusm	My work is important because I help people	Ugandan HEW study
Altriusm	As long as I can do what I enjoy, I'm not that concerned about exactly what income or awards I earn	QI-specific indicator
Community	I am respected in my community for the work I do	Ugandan HEW study
Income	I am strongly motivated by the income I can earn at work	Tanzanian survey
Income	To be motivating, hard work must be rewarded with more status and money.	Tanzanian survey
Income	My salary accurately reflects my skills and workload	Tanzanian survey
Intention to leave	I intend to stop working in this role in the next 12 months	Ugandan HEW study
Job satisfaction	I am proud of the work I do	Tanzanian survey
Job satisfaction	In general, I am satisfied with my role	Ugandan HEW study
Knowledge gain	I gain knowledge from being in this role	Ugandan HEW study
Knowledge gain	Training sessions that I attend are worthwhile and add benefit to my career path	QI-specific indicator
Motivation	At the moment I don't feel like working as hard as I can	Tanzanian survey
Motivation	I feel like performing the duties required of me	Ugandan HEW study
Needs satisfaction	I am strongly motivated by the recognition I get from other people	Tanzanian survey
Needs satisfaction	It is important that I do a good job so that the health system works well	Ugandan HEW study
Needs satisfaction	My job makes me feel good about myself.	Tanzanian survey
Needs satisfaction	I feel it is not so important doing a good job if nobody else knows about it	QI-specific indicator
Organisational citizenship	I am willing to do more than is asked of me in my role	Ugandan HEW study
Organisational citizenship	Sometimes I don't understand why I am asked to do certain things, but I do them anyway	Ugandan HEW study
Organisational justice	The system of choosing who attends training sessions is fair	QI-specific indicator
Organisational justice	I do not have enough opportunities to attend training sessions to develop my career	QI-specific indicator
Outcome expectancy	I am keenly aware of the career goals I have set for myself	Tanzanian survey
Outcome expectancy	If I do well at work, I will achieve my goals	Ugandan HEW study
Programme	I am proud to be working in my role	Ugandan HEW study
Programme commitment	I feel committed to my role	Ugandan HEW study
Resource availability	The health system provides everything I need to do my job properly	Ugandan HEW study
Self-efficacy	I can solve most problems I have at work if I work hard	Ugandan HEW study
Supervision	Suggestions made by people like me on how to improve their work are usually ignored by supervisors	Ugandan HEW study

| Supervision | My supervisors and managers are supportive of me | Ugandan HEW study |
| Workload | I can complete all of the work I am expected to do | Ugandan HEW study |

All items had Likert scale response options where 1=strongly agree, 2=agree, 3=neutral, 4=disagree, 5=strongly disagree.

Table 2: Background Characteristics of Participants from four regions (n=401)

Variables		Number (%)
Region		
	Amhara	107(26.93)
	Oromia	106(26.43)
	SNNPR	137(34.16)
	Tigray	50(12.47)
Age(Yrs)		
	18-24	90(22.67)
	25-30	232(58.44)
	>30	75(18.89)
Job title		
	Health extension workers	210(52.37)
	Care provider	110(27.43)
	Leaders	63(15.71)
	Other	18(4.49)
Gender		
	Male	109(27.32)
	Female	290(72.68)
Work experience		
	<1month	4(1.01)
	1-6month	50(12.17)
	6month-1year	40(10.08)
	1-2years	44(11.08)
	2-4years	55(13.85)
	>4years	204(51.39)

Table 3. Three-factor exploratory factor analysis results

Variable	Factor 1: Personal and altruistic goals	Factor 2: Pride and personal satisfaction	Factor 3: Recognition and support	Uniqueness
My work is important because I help people	0.65			0.44
I am respected in my community for the work I do	0.58			0.51
I am keenly aware of the career goals I have set for myself	0.57			0.50
I feel committed to my role	0.56			0.44
If I do well at work, I will achieve my goals	0.54			0.57
I am willing to do more than is asked of me in my role	0.47			0.68
I can solve most problems I have at work if I work hard	0.37			0.70
I can complete all of the work I am expected to do		0.41		0.68
I feel like performing the duties required of me		0.53		0.55
I am proud of the work I do		0.57		0.50
I am proud to be working in my role		0.65		0.43
In general, I am satisfied with my role		0.57		0.64
My job makes me feel good about myself.		0.54		0.57
It is important that I do a good job so that the health system works well			0.48	0.51
Training sessions that I attend are worthwhile and add benefit to my career path			0.49	0.59
To be motivating, hard work must be rewarded with more status and money.			0.58	0.57
I am strongly motivated by the recognition I get from other people			0.44	0.62
I gain knowledge from being in this role			0.62	0.38
My supervisors and managers are supportive of me			0.36	0.73

Factor 1 interpreted to represent personal and altruistic goals. Factor 2 interpreted to represent pride and personal satisfaction. Factor 3 interpreted to represent recognition and support.

Table4. Factors associated with overall motivation

Factor	Coef.	95% CI	P-value
Region			
Amhara	Reference		
Oromia	0.19	(-0.04, 0.42)	0.110
SNNPR	-0.35	(-0.59, -0.12)	0.003
Tigray	-0.05	(-0.32, 0.21)	0.685
Job title			
HEW	Reference		
Health care provides	0.13	(0.32, -0.05)	0.161
Leaders	-0.19	(0.03, -0.41)	0.096
Other	-0.23	(0.17, -0.64)	0.269
Workload			
Light: more than enough time to complete duties	Reference		
Medium: enough time to complete duties	-0.48	(-0.90, -0.06)	0.024
Heavy: barely enough time to complete duties	-0.29	(0.11, 0.70)	0.163
Perceived gross salary fair			
Very fair	Reference		
Quite fair	0.00	(-0.79, 0.80)	0.99
Neither fair nor unfair	0.29	(-0.54,1.12)	0.49
Quite unfair	0.10	(-0.69,0.90)	0.80
Very unfair	-0.04	(-0.87, 0.78)	0.91
Average job satisfaction	0.23	(0.13,0.34)	0.001

Table 5. Factor1:Factors associated with efforts in personal and altruistic goals

Factor	Coef.	95% CI	P-value
Gender			
Male	Reference		
Female	0.01	(-0.08, 0.09)	0.896
Region			
Amhara	Reference		
Oromia	0.13	(-0.02, -0.25)	0.018
SNNPR	0.12	(-0.01, -0.23)	0.039
Tigray	0.04	(-0.17, 0.08)	0.523
Age			
18-24	Reference		
25-30	0.04	(-0.14,0.5)	0.403
>30	0.01	(-0.012,0.13)	0.915
Perceived gross salary fair			
Very fair	Reference		
Quite fair	-0.27	(0.10, -0.65)	0.155
Neither fair nor unfair	-0.27	(0.12, -0.66)	0.181
Quite unfair	-0.21	(0.17, -0.59)	0.277
Very unfair	-0.26	(0.13, -0.65)	0.199
Average job satisfaction	0.34	(0.29,0.39)	0.001
Average leave	-0.08	(-0.04, -0.12)	0.001

Table6. Factor2_ Factors associated with pride and personal satisfaction

Factor	Coef.	95% CI	P-value
Gender			
Male	Reference		
Female	-0.002	(-0.10, 0.09)	0.964
Region			
Amhara	Reference		
Oromia	-0.004	(-0.12, 0.11)	0.935
SNNPR	-0.11	(-0.22, 0.001)	0.051
Tigray	0.08	(-0.04, 0.20)	0.201
Age			
18-24	Reference		
25-30	0.08	(-0.02, 0.19)	0.151
>30	0.14	(0.01, 0.28)	0.039
Work experience			
<1month	Reference		
1-6month	-0.24	(-0.63, 0.14)	0.218
6month-1year	-0.26	(-0.65, 0.14)	0.204
1-2years	-0.23	(-0.62, 0.16)	0.248
2-4years	-0.13	(-0.51, 0.26)	0.524
>4years	-0.30	(-0.68, 0.08)	0.120
Average leave	-0.06	(-0.10, -0.02)	0.003
Average job satisfaction	0.55	(0.50, 0.60)	0.001

Table 7. Domain3_factors associated with recognition and support

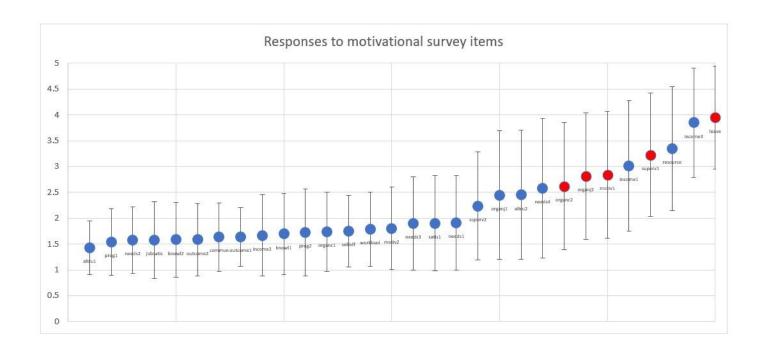| Factor	Coef.	95% CI	P-value
Gender			
Male	Reference		
Female	-0.01	(-0.17,0.14)	0.863
Region			
Amhara	Reference		
Oromia	-0.15	(-0.29, -0.01)	0.034
SNNPR	-0.17	(-0.32, -0.03)	0.017
Tigray	0.08	(-0.07,0.24)	0.290
Age			
18-24	Reference		
25-30	-0.02	(-0.16,0.10)	0.710
>30	0.04	(-0.13,0.21)	0.633
Job title			
HEW	Reference		
Health care provides	0.12	(0.001,0.25)	0.053
Leaders	0.02	(-0.17,0.20)	0.862
Other	-0.01	(-0.28,0.25)	0.929
Work experience			
<1month	Reference		
1-6month	-0.26	(-0.73,0.20)	0.267
6month-1year	-0.35	(-0.83,0.12)	0.147
1-2years	-0.29	(-0.76,0.18)	0.227
2-4years	-0.34	(-0.80,0.12)	0.151
>4years	-0.39	(-0.85,0.07)	0.099
Perceived gross salary fair			
Very fair	Reference		
Quite fair	-0.15	(-0.61,0.30)	0.514
Neither fair nor unfair	0.01	(-0.47,0.48)	0.976
Quite unfair	0.01	(-0.45,0.46)	0.973
Very unfair	0.09	(-0.39,056)	0.712
Average job satisfaction	-0.09	(-0.14, -0.04)	0.001
Average leave	0.35	(0.29,0.41)	0.001

Figures

Figure 1

Plot of responses to motivational survey options