Author’s response to reviews

Title: Understanding job satisfaction and motivation among nurses in public health facilities of Ethiopia: a cross-sectional study

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Author’s response to reviews:

Reviewer #1

Response

Thank you for an interesting paper   Thank you very much for the comment.

The methodology is well explained

Thank you very much for the comment.
1. Table 1:
- percentage was used to indicate the level of satisfaction - thus why was CI included in the percentage?

- it was reported that job satisfaction level were higher in female nurses - however looking at table 1 which only showed that 65% female is satisfied and 55.5% male is satisfied - this merely indicated that more female nurses are satisfied not that female has higher job satisfaction level

Thank you for the comment.

• Percentage of job satisfaction level is a point estimate calculated from our sample data; and refers to the national level of nurses’ job satisfaction from randomly selected nurses and facilities.

• We calculated CI to estimate the width of job satisfaction level from our sample data (to indicate plus or minus error to the true value). The 95% CI indicates the true unknown value (assumed that if someone calculated it from census data) of job satisfaction lies within the lower and upper limits. In other words 5% of the interval might not contain the true (population) value. It is important for policy makers and researchers to understand the minimum and maximum values of nurse’s job satisfaction in the country.

We revised the manuscript accordingly, as highlighted in yellow, page 11, line number 254-255.

A greater proportion of female than male nurses expressed satisfaction with their current jobs (65.6% versus 55.5%, p=0.04)

table 2;

why was ICC conducted for between and within facility since Intraclass Correlation Coefficient (ICC) is a measure of the reliability of measurements or ratings only

• Our study employed a two stage cluster sampling design. Therefore, we calculated ICC for two purposes:

a) an indication of the need for multilevel analysis instead of conventional analysis

b) Shows (present) the degree of dependency within two randomly selected nurses belonging to the same cluster (health facility) and understand how nurses share similar facility characteristics.

We believe that Cronbach alpha is a measure of reliability which we presented in the table, but ICC is not the measure of item reliability or rating.

We described both concepts in the method sections, page 9, line number 193-196 & page 9, 215-221.
table 3 and 4

The table 3 and 4 was entitled % of nurses who were satisfied with job condition related to intrinsic motivation/extrinsic motivation by items, facility with overall job satisfaction using TCC.

- not convince this contribute to the results. Thank you for the comment.

TCC indicates strengths of degree of relationship between intrinsic and extrinsic motivation items with overall job satisfaction (outcome). For limited resource countries like Ethiopia, the government may not provide all intrinsic and extrinsic motivation items at a time to enhance nurse’s job satisfaction. Rather, the government may aim to improve selected important job conditions (e.g. in-service training, or salary, or recognition from organization, or supplies, or equipment, etc.).

Therefore, we believe that TCC is an important indicator to guide policy makers to prioritize interventions in order to increase nurse’s job satisfaction in limited resource settings.

We revised the manuscript, as highlighted in yellow on page 9, line number 210-211:

Thus TCC is an important indicator to guide policy makers to prioritize interventions in order to increase nurse’s job satisfaction in limited resource settings.

Table 6;

why was COR reported instead of AOR

for all the ref used in the analysis, it should be included in the table eg for gender/sex, male and female has to be listed only when it is significant in bivariate will one goes on to performed multivariate - eg sex/gender CI is between 0.97 and 2.42 which means there is a value 1 in between so it should not be included in multivariate Thank you for the comment.

- We calculated COR for two purposes:

  • To understand independent effects of predictors/independent variables/ on nurse’s job satisfaction/outcome

  • To identify potential candidate predictors/independent variables/ for performing multivariable modelling.

If the CI of odds ratio includes 1, then it means this predictor is not statistically significant, but does not mean to omit the predictor in multivariable model.

Instead, we used a cut off p-value (<0.25) to identify candidate predictors for multivariable model. Predictors with p-value >0.25 were not included in multivariable model and their AOR is indicated with blank.
We have already described the steps in method section, page 10, line number 215-231.

We added COR value (COR=1) for the reference category, highlighted in yellow in the Results section, Table 6, page 17, line number 305-306.

Reviewer #2

Responses

Since this journal is for international readers, job satisfaction and motivation among nurses are plentiful in clinical nursing journals as a whole. Judgment needs to be made as to whether this manuscript will add to the knowledge/practice base at an international level for the readers. Thank you for the comment.

We believe that our study provides unique contributions to the existing body of literature on nurses’ job satisfaction and motivation globally for the following reasons:

• Our study used standard and rigorous research methods; had a large sample size and was designed meticulously to provide nationally representative information for Ethiopia. It includes randomly selected hospitals and health centers located in rural and remote areas as well as urban areas. The study represents findings from a low income country where national studies of this scale are rarely conducted, thus adding a new perspective with precise estimates on nurses’ job satisfaction and motivation to the global literature.

• Our study analyzed a combination of intrinsic and extrinsic motivational factors instead of specific job items in order to explore potential factors associated with job satisfaction. We believe that investigating all job conditions using established theory may guide policy makers and researchers to enhance nurses’ job satisfaction and motivation.

• Many studies on this topic use conventional statistical analysis. However, we employed multilevel analysis to account for clustering effects in order to maximize the precision of estimates. Others (students, researchers or policy makers) may learn from our analytical approaches for performing similar studies of job satisfaction and motivation; or similar health-related problems.

• Findings from the study can be used by the Ethiopian Ministry of Health, regional health bureaus and other stakeholders who invest in the Ethiopian health sector to plan appropriate interventions that promote nurse retention within the public nursing workforce. The findings can also help other low and middle income countries design appropriate human resources for health strategies, especially for nursing professionals.

The background is very weak and needs to provide information of the current situation in Ethiopia. Thank you for the comment.
We have added the following paragraph to the Introduction to describe the broader situation in Ethiopia (highlighted in yellow, page 3, line number 53-63):

Ethiopia is the second most populous nation in Africa, with a life expectancy at birth of 65.5 years in 2016 [1]. The country has successfully scaled up multifaceted interventions in the health sector, expanded health science training institutions and universal health service coverage, and trained a massive health workforce as part of its efforts to achieve the Millennium Development Goals [2]. Remarkable achievements have been observed, including a 67% reduction in under-five mortality rates (from 204 per 1000 live births in 1990 to 67 in 2016) [2, 3] and a 70% reduction in the maternal mortality ratio (from 1400 per 100,000 live births in 1990 to 412 in 2016) [2, 3]. Ethiopia has also made substantial progress in expanding coverage of institutional delivery by skilled health providers from 5% in 2000 to 28% in 2016 [1, 3]. However, this increase is very low compared with neighboring countries [1]. Morbidity and mortality due to malaria, HIV/AIDS and tuberculosis have also declined [2].

You refer to a number of small scale various studies (ref. 12-19) which will need to be elaborated in terms of strengths, flaws and gaps in knowledge so as to understand where this study fits. Thank you for the comment.

We revised the manuscript to point out the flaws in previous studies to strengthen the study justification, as highlighted in yellow, on page 5, line number 107 to 112:

This is certainly the case in Ethiopia, where previous small-scale studies have focused on smaller geographic areas, specific regions, have largely been limited to hospital settings, and have employed a small number of job-related items; they have found mixed results regarding nurses’ job satisfaction, motivation, and retention [19-26]. The weaknesses of these studies limit their power to produce generalizable findings for making evidence-based decisions at the national level.

It would appear this study was one of the first to develop efforts to understand how to meet the strategic plans of the Federal Ministry of Health's Planning for 2016-2025. When referring to nurse training, what is the situation in terms of the proportion of nurses choosing which programmes, and is it the intention to increase nurses with bachelor and masters degree? This will provide information to understand the comparison of nurses with different characteristics. Thank you for the comment.

- The Human Resources Information System in Ethiopia is not fully functional and it is difficult to obtain timely data from health facilities. Similarly, obtaining comprehensive data from pre-service institutions is also challenging. We used the most recent data obtained from the federal Ministry of health (FMOH) human resources strategic plan for 2016-2025 and health sector transformation plan from 2016-2020; and unpublished FMoH program data. The FMOH is also using data from these plans.
We have revised the manuscript accordingly, as indicated in yellow colour, page 4, line number 78 to 87:

Nurses who graduated in diploma are eligible to continue the four years training program at university after they provide 2 years of services at health facility level. Similarly, nurses who graduated in bachelor’s degree can join the two years masters training program after they provide 2 years of services at health facility level. Nurses are the largest health provider cadre in Ethiopia, numbering 50,604 in 2016; their number is projected to reach 127,299 in 2025 [6]. Unpublished FMoH data show that currently, 92% of the nursing workforce in Ethiopia have diploma, 3% have bachelor’s degree and 5% have master’s degree. Hence the HRH projections show that Ethiopia will need to deploy an additional 24,558 bachelor-level and 344 masters-level nurses at primary health care facilities and specialized hospitals by 2025 to meet the needs of the country’s growing population [6].

'Objective' of study is probably your 'aim' of study. Research question 3 seems to be the same as research question 1. You are not engaging in a 'prediction' study so research 3 may be unachievable. Thank you for the comment.

We revised the study objectives accordingly, as highlighted in yellow, page 5, line number 115-120.

The objective of this study was to examine job satisfaction, motivation and associated factors among nurses working in the public health facilities of Ethiopia, with the aim of improving performance and productivity in the health care system. The specific research questions were: 1) What is the overall level of job satisfaction among nurses in Ethiopia, and how are nurses’ characteristics and job conditions associated with overall job satisfaction? 2) What are nurses’ perceptions of specific job conditions, and do they vary by nurses’ characteristics?

It is difficult to understand how you randomly selected 125 health facilities (91.1% nurses at health centres and <10% representing hospitals) from a total of 3,372 potential sites. What are the differences (if any) between the 11 regions (you selected 6 of them)?

There is confusion about only selecting 5 nurses from each of the health facility to administer a questionnaire. How was '5' determined? Thank you for the comment.

- The study was designed to provide representative information for health facilities but not specific to hospitals or health centers. We received a list of all hospitals and health centers from the FMoH. We then randomly selected 116 health centers from the total number of 3245 health centers and 9 hospitals from the total number of 127 hospitals. In order to obtain heterogeneous information and to perform subgroup analysis, we allocated the sample health facilities into hospitals and health centers using proportional allocation technique for each region.
- We did not aim to select 5 nurses from each facility. The FMoH data showed that at least 5 nurses were working per health facility during data collection period. Using the MEASURE Evaluation (reference no 29) recommendation to sample health care providers per facility, we invited 4 nurses per health facility and selected at random for interview.

- We did not select 6 regions from the 11 regions. We included all 11 regions and drew our sample from each region. We categorized regions for analysis: Tigray, Amhara, Oromia, SNNP, City administrations or urban region (Addis Ababa, Dire Dawa & Harari) and Developing regions (Afar, Somali, Benshangul-Gumuz & Gambella). Because we assumed that regions in each category has similar characteristics and aim to power the sample for group analysis. We performed chi-square analysis to see whether regions have differences/similarities in nurse job satisfaction level (see table 2). We indicated lists of regions in foot note in table 2: Note: a includes Addis Ababa, Dire Dawa, Harari; b includes Afar, Somali, Gambela, Benshangul-Gumuz regions

- We revised the manuscript accordingly, as highlighted in yellow, page 6, line number 133-137:

The HRH strategic plan indicated that there were a minimum of five nurses stationed at each public health facility during the study period [6]. Based on a MEASURE Evaluation recommendation regarding sampling of health care providers per facility [29], we decided to invite four nurses at each of 125 health facilities to participate in the study in order to achieve the total sample of 500 nurses. The four nurses were selected at random from all those assigned to the facility

And indicated on page 6, line number 140-144:

The 125 health facilities in the sample were allocated proportionally to facility type (9 hospitals and 116 health centers) to each region to obtain heterogeneous information and perform subgroup analysis. Using a list of all health facilities in the country obtained from the FMoH, we then randomly selected 116 health centers from a total of 3,245 health centers and 9 hospitals from a total of 127 hospitals.

The questionnaire used was adapted from a structured questionnaire on 'job satisfaction' (ref. 23) and factors influencing turnover intentions of nurses in Ethiopia (ref. 20). The reason and process of 'adapting' a questionnaire will need to be reported. In fact, it would seem that you have partially explained this on p.7 (data management and analysis section) w.r.t. 'exploratory factor analysis and Cronbach alpha for each subscale'. Thank you for the comment.
The questionnaire was adapted to include additional background information related to the Ethiopian health care system and nurse’s characteristics. For example, variables such as nurses’ years of service obligation, compulsory health service scheme, nurses’ socio demographic variables (including family size, marital status, work experience) were included.

We revised the manuscript accordingly, as highlighted in yellow, on page 7, line number 148-152.

The questionnaire was adapted to include additional background information related to the Ethiopian health care system and nurse’s characteristics. For example, variables such as nurses’ years of service obligation under the compulsory health service scheme and their socio demographic characteristics (including family size, marital status, and work experience) were included.

A second confusion (which I could not follow) is whether a 5-point Likert scale was used to answer the questions (p.6) or was job satisfaction rated as 1=satisfied (combining responses of strongly agree and agree) or 0=not satisfied (combining responses of neutral, strongly disagree and disagree). Thank you for the comment.

We asked nurses to provide their opinion using 5-point Likert scale to give freedom (avoid ambiguity) for nurses to answer each question. During analysis, we grouped their responses into two categories (satisfied and not satisfied) for the following reasons:

• To provide meaningful interpretation and results presentation
• To increase statistical power for performing group comparisons/statistical tests

We revised the manuscript accordingly and highlighted in yellow, on page 9, line number 198-203:

The key outcome variable was overall job satisfaction. Nurses’ responses were coded into dichotomous levels – with 1=satisfied (combining responses of strongly agree and agree) and 0=not satisfied (combining responses of neutral, strongly disagree, and disagree) – in order to increase statistical power for performing group comparisons and statistical tests; and to contribute to meaningful interpretation and presentation of the results. Each job condition item was similarly coded into 1 (satisfied) and 0 (not satisfied).

There are ethical concerns that were not mentioned regarding recruitment of nurses and confidentiality of data collected. Issues include voluntary participation, time to receive informed information about the study, and the use of supervisors who were part of the data collection (collecting and checking the questionnaires are completed afterwards). Why was anonymous return of questionnaire not employed to protect identity? Thank you for the comment.
We provided verbal consent for each nurse to provide their responses in private place without disruption of provider and patient interaction. We protected identity of nurses. We did not record their name, employ ID and living places. The manuscript addressed most of the ethical issues, page 11, line number 240-244 and page 21, line number 405-409. We also revised the manuscript accordingly, as highlighted in yellow, page 8, line number 169-173.

Data collectors obtained verbal consent from nurses after informing them about the nature of the study and that their participation was voluntary. Then they scheduled individual interviews with the nurses to avoid disruption of patient care. Data collectors conducted interviews in a private room to maintain confidentiality of nurses’ responses and protect their identity (participant names and identification number).

Separate the reporting of the results and the scale reliability (p.10-11) (which is better under the methods section). Thank you for the comment.

We moved table 2 into the Methods section (now renumbered as table 1), page 10, line number 238-239.

The discussion compares findings with countries (Nigeria, Slovenia, Cyprus, Ghana, Papua New Guinea) that were not mentioned in the background as being better off or less off compared with Ethiopia. Can elaborate more about the similarities and differences of studies you refer to as this is the discussion chapter. Once this discussion is provided, you can conclude/recommend as you have done on the need for the next steps to take. Although this is study in Ethiopia, what can international gain from it for those nurses working in health centres/hospital settings. Thank you for the comment.

We revised the manuscript as indicated in yellow colour in background section, page 5 line number 102-104.

Previous studies have also shown that individual and workplace characteristics are associated with health workers’ job satisfaction and motivation [13-17].
Editorial Policies

Response

Please ensure that your manuscript adheres to the STROBE guidelines for reporting observational studies (http://www.equator-network.org/reporting-guidelines/strobe/). Please include a completed STROBE checklist as an additional file. We have completed the STROBE checklists and attached as additional file.

Please provide copies of your questionnaire in Amharic and in English translation as additional files. Please include a List of additional files according to the guidelines here: https://bmcnurs.biomedcentral.com/submission-guidelines/preparing-your-manuscript#preparing+additional+files

We have attached the questionnaire in PDF file as additional file

In your Ethics approval and consent to participate statement, please include the phrase "as approved by the Institutional Review Board" after the statement that verbal consent was obtained. We revised the manuscript accordingly, page 11, line number 246; and page 21, line number 413.

Please read the following information and revise your manuscript as necessary. If your manuscript does not adhere to our editorial requirements, this may cause a delay while this is addressed. Failure to adhere to our policies may result in rejection of your manuscript.

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We have referred the guideline.

Where a mandatory Declarations section is not relevant to your study design or article type, please write "Not applicable" in these sections.

For the 'Availability of data and materials' section, please provide information about where the data supporting your findings can be found. We encourage authors to deposit their datasets in publicly available repositories (where available and appropriate), or to be presented within the manuscript and/or additional supporting files. Please note that identifying/confidential patient data should not be shared. Authors who do not wish to share their data must confirm this under this sub-heading and also provide their reasons. For further guidance on how to format this section, please refer to BioMed Central's editorial policies page (see links below).
Declarations

- Ethics approval and consent to participate
- Consent to publish
- Availability of data and materials
- Competing interests
- Funding
- Authors’ Contributions
- Acknowledgements

We have checked the declaration sections.