


Non-financial Incentives for Retention of Health Extension Workers in Somali Region of Ethiopia: A Discrete Choice Experiment

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ABSTRACT: The study evaluated non-financial incentive packages to retain health extension workers in the Somali Region of Ethiopia using the Discrete Choice Experiment (DCE) technique, conducted among 66 health extension workers in 3 *woredas* (districts). The study used a mix of qualitative and quantitative methods in sequential order. Mixed logic regression modeling was used to determine the effect of different job attributes on the retention of the health extension workers, while Preference Impact Measure (PIM) was used to determine the combinations of preferred incentive packages to retain the health extension workers in their current workplace. Opportunity for continued education ranked first, 1.009 (0.655, 1.36), $P = .000$, followed by career advancement/opportunity for promotion, 0.321 (0.107, 0.534), $P = .003$, then supportive management 0.234 (−0.395, −0.073), $P = .004$. in terms of impact on retention. The most preferred incentive package for retention using the PIM model was opportunities for continued education after 3 years and always good availability of and access to amenities (running water, electricity, internet), which predicted a 77% retention rate if implemented. The identified proposed retention incentive packages will help in developing evidence-based incentive policies and strategies for the future retention of health extension workers in this region.

KEYWORDS: Discrete choice experiment, retention, health extension workers, rural areas

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What do we already know about this topic?

The shortage of health workers, especially in low- and middle-income countries, is among the most significant constraints to achieving universal health coverage. The recruitment, motivation, and retention of health workers, particularly in rural areas, has been a major area of policy discussion globally, with the need to identify the right mix of interventions to motivate and retain health workers especially in remote areas. The World Health Organization recommended that interventions to strengthen the rural health workforce be tailored according to the specific socio-economic and health system context of individual countries.

How does your research contribute to the field?

This is the first study in Somali Region of Ethiopia to employ the use of Discrete Choice Experiment to identify proposed non-financial incentive packages that can be used to retain health workers.

What are your research's implications toward theory, practice, or policy?

The study identified non-financial incentives that could be implemented to ensure motivation and retention of health extension workers and assist the government to review the

current retention and incentive strategies for health extension workers. The implementation of these non-financial incentives is essential to the success of the country's Health Extension Program (HEP) aimed to achieve universal health coverage by ensuring the retention of motivated health extension workers who mostly work in the rural and hard to reach areas and the main frontline providers in the program.

This will allow the Ministry of Health and the Regional Health Bureau to design incentive systems and retention strategies to maximize the retention of health extension workers and the availability of their skills within the public sector. The overall impact on the public health sector will be better service delivery to populations since health extension workers will choose to remain in their current positions in rural and underserved areas.

Background

Adequate human resources for health are vital to the effective functioning of health care systems. However, shortage of qualified health workers in rural areas is common in low- and middle-income countries.¹ Health workers retention represents a major challenge to the delivery of high-quality health services.¹

Ethiopian government in 2020 commissioned a new roadmap to guide the country's efforts to optimize the



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implementation of its flagship Health Extension Program.² Improvements in health outcomes have been positively influenced by this government's policy support for the Health Extension Program (HEP) especially the engagement of Health Extension Workers (HEWs), which has contributed to health promotion, disease prevention and community-based disease case management, leading to the reduction of morbidity and mortality.² The Health extension workers (HEWs) serve as the main frontline providers for the national health care system. They are salaried employees of the government and provide promotion, preventive and basic curative health care services at rural health posts. Health posts are the lowest level service delivery points in the country health care systems and the operational unit of the Health Extension Program equipped to deliver the different packages of essential services to the community. However, the cadre has a high turnover rate.²

The availability and retention of health extension workers among underserved and rural populations in the country is essential to the successful implementation of the roadmap.² One of the objectives of Ethiopia's human resources plan is to enhance health workforce motivation and retention especially in rural areas through various strategic actions. One of "these" is to conduct regular motivation and retention studies to assess the extent of the retention problem and design motivation and retention mechanisms to address these challenges.³

The Somali Region in the southeastern part of Ethiopia is predominantly populated by pastoralists (85%), with the majority of people living in hard-to-reach/remote areas. The health system in the region is constrained by a limited number of health facilities, poor infrastructure, limited number of qualified health workers, high turnover especially among health extension workers in the remote/rural areas, and low density of health workers at 0.84 per 1000 population,⁴ considerably lower than the 4.5 per 1000 population standard proposed by the World Health Organization (WHO) to achieve universal health coverage.⁵ While the Ministry of Health and the regional health bureaus are implementing various financial and non-financial incentive packages for health professionals, the existing schemes are not systematically designed or consistently implemented in all regions and health facilities, and are not provided for all health workers, thus contributing to high attrition rates.³

The Discrete Choice Experiment (DCE) methodology which is a quantitative research method that measures the strength of preferences and trade-offs among any population was used specifically for health workers toward different job characteristics that can influence their decision to take up and be retained in rural postings.⁶

The aim of the study was to determine the preferred non-financial incentive packages to retain health extension workers in the Somali Region of Ethiopia using the DCE technique.

Methods

Study design

The study design was DCE using mixed-methods qualitative followed by quantitative formative research in sequential order.

The DCE was used specifically in this study for health workers, as a stated preference technique that systematically polls health workers' preferences regarding what package of non-financial incentives would be most effective to motivate health workers to retain them in underserved areas. Through the polling process, the DCE identifies the trade-offs that health workers are willing to make between specific job characteristics as well as the probability of being retained on a job post. DCE data allow the estimation of the strength of preference for a job characteristic or attribute relative to other attributes and the probability that an individual will be retained on a job with specified characteristics.⁶

DCE has development stage for identifying the attributes which is done using a qualitative method followed by a quantitative method. The qualitative phase used key informant interviews (KIIs) and focus group discussions (FGDs) to select job attributes and determine job attribute levels. The KIIs involved a mix of managers and policymakers; the FGDs involved health workers. The second quantitative phase involved the use of DCE questionnaires that were developed from the findings from the qualitative phase to elicit information on preferences for attribute packages from health workers. The study was conducted between August and October 2021.

Study population

The population included in the study were 96 health extension workers in the health facilities and 3 health managers and 2 policymakers at the regional level. The health extension workers are the main health workforce for the Ethiopia flagship community health program called "Health Extension Program (HEP)" aimed at achieving universal health coverage. The key informants were 5 individuals who are health managers and policymakers from health and civil service bureaus at the regional level. The health managers at the regional levels are responsible for the coordination and technical guidance for the implementation of the national strategy for the Health Extension Program in the region.

The FGDs and DCE study were conducted among the health extension workers in the 3 selected *woredas*: Jerer zone (Gashamo *woreda* with estimate population of 103 572), Korahe zone (Kebridehar *woreda* with estimated population of 74 977), and Dolo zone (Warder *woreda* with estimated population of 24 928).

Sampling technique

A multistage sampling technique was used. In the first stage, 3 zones were randomly selected from the 5 zones encompassing

an ongoing primary health care project. In the second stage, 3 *woredas* were randomly selected, one from each of the 3 zones. In the third stage, 120 (35 health extension workers from each of the 3 *woredas*) health extension workers were invited out of which 105 of them consented and were recruited for the study. Thirty of them participated in the FGDs (10 in each *woreda*), a qualitative method used in the developmental stage to identify the attributes while the DCE survey was completed by 66 health extension workers out of the 75 from the 3 *woredas* who consented to participate.

Data collection

KII data were collected from 5 participants made up of managers and policymakers at the regional level to assess which non-financial incentives are most likely to be feasible based on current health system capacity, resources, and policy. They were selected based on their roles in the implementation of the health extension program in the region. The managers included the coordinator of the HEW program in the region and supervisors of the health extension workers. The policy makers were from the planning bureau and civil service bureau involved in the recruitment, payment of salaries and allowances and training of the Health extension workers. The interview guide was developed based on the previous studies but contextualized to reflect the reality and available evidence in the region after validation. KIIs were audio-taped and notes were also taken with prior verbal consent from the participants. The recordings were transcribed, and then underwent manual thematic analysis. The data provided the lists of job attributes for motivating and retaining health extension workers.

During the FGDs, the participants in the 3 groups were asked specific questions about job attributes that were identified during the KIIs. Motivational/retention ranking forms were used during the FGDs to develop the job attributes and levels. The participants were asked to individually rank these attributes according to which they felt was most important to them and identify realistic and appropriate levels for each job attribute. The information gathered using audio tapes and notetaking was categorized and thematically analyzed to determine the top 6 job attributes and corresponding levels, which were included in the DCE survey.

The survey questionnaire, developed from the qualitative survey was constructed using the computer software, SAWTOOTH CBC Tool (<https://sawtoothsoftware.com/conjoint-analysis/cbc>).⁷

The questionnaire was administered by trained interviewers to 66 health extension workers through face-to-face interviews. Data were then uploaded by interviewers to a secure cloud server using Sawtooth and real-time responses were collected and managed through a cloud server. The DCE survey provided the respondents with sets of 2 hypothetical preference pair job posting scenarios—Job posting A and Job posting B

with 72 choice sets. Respondents were asked to consider each scenario in the preference pair and select which scenario they would most prefer if they were hypothetically looking to be retained in such a job posting. The specific characteristics of each scenario in the preference pair were determined randomly by computer to ensure that all possible combinations of incentives are included. Each scenario was presented with different levels for each of the 6 attributes and each respondent provided with 12 preference pairs to identify which scenario within each pair they most prefer.

Data management and analysis

The statistical software STATA was used to process the information obtained from the DCE questionnaires and analyzed using mixed logic model regression modeling.⁸ Mixed logit is a highly flexible model that can approximate any random utility model and used for examining discrete choices. It obviates the 3 limitations of standard logit by allowing for random taste variation, unrestricted substitution patterns, and correlation in unobserved factors over time and not restricted to normal distributions. It is commonly applied in the analysis of DCE with health workers and allows preference heterogeneity unlike the other options and allowed for modeling of repeated choices.⁸ Coefficients and p-values were generated for each attribute, which were used to compare the relative importance of each attribute and associated levels. The coefficient value was used to predict the effect of different job attributes on the retention of the health extension workers.

Preference Impact Measure (PIM) was used to determine the combinations of preferred incentive packages that would help retain the health extension workers in their current workplace based on the preferences they expressed in the DCE survey. PIM modeling is calculated using a “Preference Calculation Worksheet.”⁹ The worksheet involved a step-wise process. In the first step, the attribute levels for the “standard” job posting was entered in the sheet where No = 0 and Yes = 1 for each attribute. In the second step, different combinations of attribute levels to determine the preference rates for “proposed” job postings (ie, a new package in a potential policy option) was entered where No = 0 and Yes = 1 for each attribute. Then the proportion preferring “proposed” job posting is calculated automatically.⁹ It provides the estimates of the percentage of health extension workers that would prefer a job posting that offers a specific package of incentives and interventions as compared to the standard job posting. (The standard job posting is described as: facility manager is not supportive, does not share information and makes work more difficult; there are no opportunities for career mentoring and professional development; no availability and access to amenities [running water, electricity]; no transportation/allowance provided; eligibility for

Table 1. Ranking of health extension worker retention attributes and levels.

ATTRIBUTE	LEVELS
Career advancement/promotion opportunities	The eligibility to be promoted after 1 year The eligibility to be promoted after 2 years
Opportunities for continued education	No opportunities for further study and scholarship Provided with opportunities for further study and scholarship within field after 3 years Provided with opportunities for further study and scholarship within field after 5 years
Transportation (to do your work)	No transportation such as a bicycle/allowance provided for official use Transportation such as a bicycle/allowance provided for official use
Access to amenities	No availability and access to amenities (running water, electricity, internet) Always good availability and access to amenities (running water, electricity, internet)
Career mentoring programs and professional development	The availability of opportunities for career mentoring and professional development after 1 year The availability of opportunities for career mentoring and professional development after 2 years
Supportive management	The facility manager is supportive and shares information and makes work easier The facility manager is not supportive and does not share information and makes work difficult

promotion after 2 years and no opportunity for continued education.)

Ethical Consideration

Ethical approval was given by the Institutional Review Board of the Ethiopian Public Health Association. with reference number EPHA/OG/355/21 and rigorous ethical standards were applied throughout the study.

Verbal informed consent was obtained from each of the individuals selected for the study after explaining in detail the contents and procedures for the study. Only those who consented were recruited into the study. To ensure confidentiality, the data collected was used only for research purposes and kept confidential. Serial numbers and not names were used to identify respondents interviewed.

Results

The results are presented in 2 parts: from the qualitative phase and the quantitative phase of the study.

Results From the Qualitative Phase of the Study

The analysis of the KII data identified 8 non-financial incentives for motivation and retention of health extension workers in the region. These included (1) career advancement and promotional opportunities, (2) career mentoring programs and professional development, (3) opportunities to pursue further education, (4) improving the working conditions, (5) provision of housing, (6) provision of transportation and vehicles, (7) provision of refresher training, and (8) regular supervision.

Table 1 shows the ranking of the health extension workers' retention attributes and levels. During the FGDs, the participants were asked to complete the motivation and retention ranking form where they indicated their preferences from a pre-defined list of the 8 incentives prioritized during the KIIs. This was analyzed and used to develop job attribute preferences and levels. The results show the 6 top ranked attributes that were derived from the FGDs.

Results From the Quantitative Phase of the Study

This phase was conducted using the DCE questionnaire. Figure 1 shows an example of a discrete choice experiment question (choice set).

Socio-demographic Profile

A total of 66 health extension workers participated and completed the DCE questionnaire among the 75 health extension workers targeted, a response rate of 88%. Forty-five (68.2%) of the respondents were female and 21 (31.8%) were male. Forty-three (65.2%) were married with a mean age of 35.3 ± 15.4 . The mean year of working in the rural area is 4.2 ± 1.3 and 40 (61%) lived in the same town where their health facility is located.

Mixed Logic Regression Modeling

Table 2 shows the results of the mixed logistic regression analysis for the DCE data. The absolute value of the coefficients from the mix log mode is used to determine a ranking of respondents' preferences for the attributes and shows the relative importance of each job attribute. It shows that opportunity for continued education after 3 years ranked first, with coefficient of 1.009 (0.655,1.36), $P = .000$; career advancement/opportunity for promotion after 3 years with coefficient of 0.321 (0.107, 0.534), $P = .003$ ranked third; supportive management ranked fifth with coefficient of 0.234 (-0.395, -0.073), $P = .004$; and transportation ranked last with coefficient of 0.016 (-0.126, 0.16), $P = .818$ in terms of impact on retention.

Preference Impact Measure Model

Figure 2 shows the 7 topmost proposed job incentive packages for retention using the PIM model based on the preferences expressed in the DCE survey. It provides the estimates of the percentage of health extension workers that would prefer to be retained on a job posting that offers a specific package of incentives and interventions as compared to the

JobPair_Random1

If these were your only options, which would you choose?

(1 of 12)

Supportive management	The facility manager is supportive and shares information and makes work easier	The facility manager is not supportive, does not share information and makes work more difficult
Career mentoring programs	There are no opportunities for career mentoring and professional development	There is availability of opportunities for career mentoring and professional development
Access to amenities	Always good availability and access to amenities (water supply, electricity source, internet access)	No availability and access to basic amenities (water supply, electricity source)
Transportation e.g. bicycle	Transportation or allowance provided for official use	No transportation or allowance provided
Career advancement or promotion opportunities	You will be eligible for promotion after 1 year	You will be eligible for promotion after 1 year
Opportunities for continued education	There are opportunities for further study and scholarship within field after 5 years	No opportunity for continued education
	<div style="border: 1px dashed gray; display: inline-block; padding: 2px;">JobPair_Random1</div> Select	<div style="border: 1px dashed gray; display: inline-block; padding: 2px;">JobPair_Random1</div> Select

Figure 1. Example of a discrete choice experiment question.

standard job posting. Analysis shows that the most preferred incentive package to maximize motivation and retention is a package that includes opportunities for continued education after 3 years and always good availability of and access to amenities (running water, electricity, internet) (Incentive package 5). It is predicted that 77% of the respondents would choose to remain in their current posting as compared to the “standard” job posting if this package was offered.

Alternatively, a second package consisting of the availability of opportunities for career mentoring and professional development and opportunities for continued education after 3 years came out as the second-most preferred with 75% of health extension workers indicating that they would choose to remain in their current posting as compared to the “standard” job posting.

Discussion

The study provided insights on the non-financial incentive packages best suited to improve retention among health extension workers who serve in the rural population of the Somali Region of Ethiopia. This is important because retention of the health extension workers who worked mostly in the rural areas has been identified as a key factor for the success of the country’s flagship health extension program aimed to achieve universal health coverage.² However high turnover rate has been reported among them.² Improvements in health outcomes have been positively influenced by the government’s policy support for the Health Extension Program (HEP) especially the engagement of Health Extension Workers (HEWs), which has contributed to health promotion, disease prevention and community-based disease case management, leading to the

Table 2. Mixed logic regression modeling.

CHOICE	COEFFICIENT ESTIMATE (95% CONFIDENCE INTERVAL)	Z	P VALUE
Career advancement or opportunity for promotion after 3 year	0.321 (0.107, 0.534)	2.94	.003*
Career advancement or opportunity for promotion after 1 year	-0.2947476 (-0.411, -0.062)	-2.91	.003*
Supportive management	-0.234 (-0.395, -0.073)	-2.86	.004*
Career mentoring programs and professional development	0.075 (-0.075, 0.224)	0.98	.325
Access to amenities (electricity, water, internet) Always available	0.179 (-0.031, 0.389)	1.67	.095
Access to Amenities (electricity, water, internet) Good availability	0.0598 (-0.15, 0.27)	0.55	.580
Transportation	0.016 (-0.126, 0.16)	0.23	.818
Opportunities for continued education after 3 years	1.009(0.655, 1.36)	5.58	.000*
Opportunities for continued education after 5 years	0.86 (0.55, 1.17)	5.45	.000*

*P value <.05.

reduction of morbidity and mortality.² This is the first study to our knowledge that used DCE techniques to determine non-financial incentives for retention of health workers in the region. The incentives identified included opportunity for continued education, career advancement and opportunity for promotion, supportive management, access to amenities, career mentoring program and professional development, and transportation, ranked in that order.

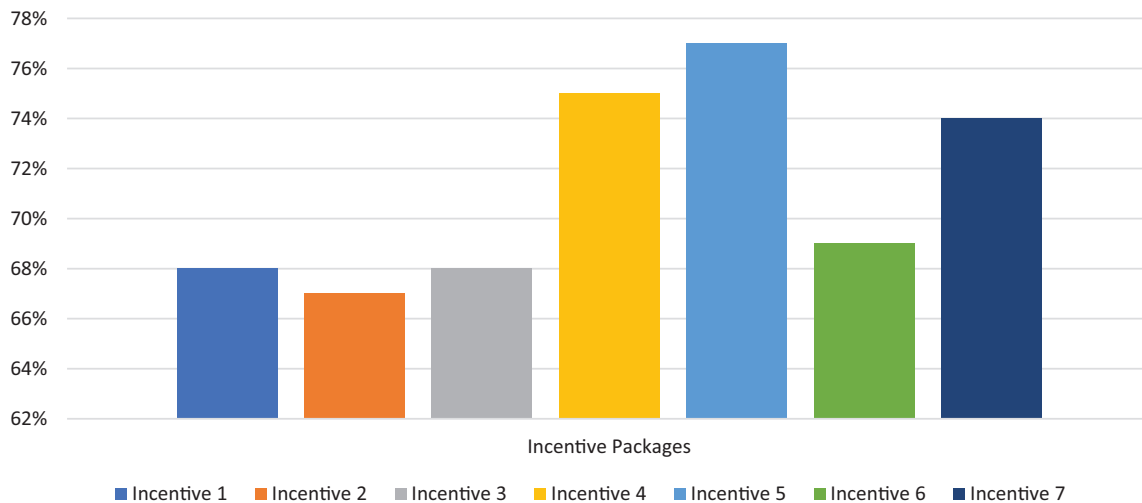
Opportunity for continued education which has the potential of ensuring personal development and aspirations of the health extension workers was found to the strongest impact on retention in this study. Most of the health extension workers joined the services as level 3 cadre officers based on their level of education with limited responsibilities. However, with the creation of level 4 cadre with more responsibilities and opportunity for free education for qualified health extension workers being provided by the government, a lot of health extension workers with requisite qualifications are interested in the training so as to improve their skills, status and assigned responsibilities.⁵ However, in view of limited funding, not all eligible health workers are able to benefit from the training. This finding on opportunity for continued education is similar to findings from many other studies as a major non-financial incentive for retention among various cadres of health workers in rural areas.¹⁰⁻¹³

A study among clinical officers in a rural district in Kenya reported that an education opportunity of 1-year guaranteed study leave after 3 years of service had the greatest impact on retention, followed by good quality health facility infrastructure and equipment.¹⁰ Similarly, a study in Tanzania among clinical officers showed that offering continuing education after a certain period of service is one of the most powerful recruitment instruments being used by the authorities to retain health workers in rural areas.¹¹ A systematic review conducted on motivation and retention of health workers in developing

countries ranked education opportunity second next to career development among non-financial incentives, while a study in India reported easier enrollment in higher education programs in lieu of some years of rural service as the most powerful driver of job choice.^{12,13} This may be ascribed to the fact that additional qualifications for health workers may result in promotional positions and increased salaries in the future.

However, a study on rural retention strategies among health workers in Cameroon reported that promises of a quota for specialist training for continued education had limited effect on improving rural retention, which was a surprise considering findings from other studies.¹⁴ Lack of belief among respondents that the quota would be implemented fairly was identified as the reason for this during qualitative interviews. The need for improved transparency and effectiveness in the implementation of incentive packages was mentioned by health workers in a study in Tanzania as an important factor to promote retention.¹⁵ Again, this points to the belief that even with additional qualifications, health workers were not convinced of the probability of promotion and increased salaries in the future.

Career development and promotion is ranked second in this study as a non-financial incentive among the study participants. Currently promotion among the health extension workers is not based on their years of employment unless if the health extension workers have enough prerequisite which include having completed grade 10 certificate with 4 years working experience and the mandatory 1 year upgrade training from level 3 to level 4.^{2,5} A systematic review on motivation and retention of health workers in developing countries also ranked career development second among the non-financial incentives.¹² A study in South Africa among doctors and other health workers cited limited career development opportunities as a demotivating factor.¹⁶ A qualitative study among health workers in Tanzania identified lack of promotion opportunities



Proposed Incentive Packages	
Incentive Package 1 <ul style="list-style-type: none"> • Career advancement/promotion opportunities - eligible for promotion after 1 year • Supportive management - the facility manager is supportive and shares information and makes work easier • Career mentoring and professional development • Always good availability and access to amenities (running water, electricity, internet) • Opportunities for continued education after 3 years 	Incentive Package 4 <ul style="list-style-type: none"> • Career mentoring and professional development • Opportunities for continued education after 3 years
Incentive Package 2 <ul style="list-style-type: none"> • Career advancement/promotion opportunities - eligible for promotion after 1 year • Opportunities for continued education after 3 years 	Incentive Package 5 <ul style="list-style-type: none"> • Always good availability and access to amenities (running water, electricity, internet) • Opportunities for continued education after 3 years
Incentive Package 3 <ul style="list-style-type: none"> • Supportive management - the facility manager is supportive and shares information and makes work easier • Opportunities for continued education after 3 years 	Incentive Package 6 <ul style="list-style-type: none"> • Career advancement/promotion opportunities - eligible for promotion after 1 year • Career mentoring and professional development • Opportunities for continued education after 3 years
	Incentive Package 7 <ul style="list-style-type: none"> • Supportive management - the facility manager is supportive and shares information and makes work easier • There is availability of opportunities for career mentoring and professional development • Always good availability and access to amenities (running water, electricity, internet) • Opportunities for continued education after 3 years

Figure 2. Percentage preference for proposed incentive packages.

as a major problem that affects motivation and suggested transparent promotion procedures be instituted.¹⁵

Supportive management was found in this study as another retention factor among the health extension workers. A study done in the region on the quality of care reported that most of the health workers expressed their frustration in being able to provide the needed quality of care because their skills and competencies are limited in view of limited access to regular in-service training, supervision and management support by the regional and woreda authorities.¹⁷

The finding on the supportive management as incentive for retention is similar to findings in many studies among various cadres of health workers that report strong leadership and supportive management as important non-financial incentives.¹⁸⁻²⁰ A study in Ghana among health workers in a district hospital reported that among the 4 factor model of

non-financial incentives, leadership skill and supervision was ranked first predictor of motivation and retention.¹⁸ Previous studies in Ethiopia reported that supportive management is the most ranked factor that influenced the job choices of health care providers including nurses and the second ranked factor among health extension workers.^{19,20} A qualitative study to explore the experiences of health workers in primary health care centers in Tanzania reported desire for more structured and supportive supervision and feedback on their performance from managers as a major factor that motivates them and an important area for sustainable improvement in the services they provide.¹⁵

Access to amenities in the health facilities like electricity, water supply, and internet was identified in the study as an important incentive for motivation and retention. The region is one of four Ethiopia Developing Regional States (DRS), predominantly

inhabited by pastoralists (85%) and faces developmental inequities in term of infrastructure and access to basic amenities.⁵ Similarly, a systematic review of health workers' motivation and retention ranked the improvement of hospital infrastructure as the third non-financial incentive that could increase health worker retention.¹² A study among health workers in Ghana reported that among the four factor model of non-financial incentives, availability of infrastructure and resources was ranked third predictor of motivation and retention.¹⁸

A qualitative study in South Africa among doctors working in rural areas found that many complained about being unable to connect to online training courses to learn a specialty and reported they left their employment at rural clinics due to a lack of appropriate facilities, amenities, and medical equipment.¹⁶ Another qualitative study on frontline staff motivation levels and health care quality in rural and urban primary health facilities in Ghana reported that the major sources of demotivation for health workers in rural areas were limited access to social amenities such as water and electricity, which was found also to affect the quality of care.²¹

Career mentoring and professional development was also reported as an important incentive factor in this study. This is similar to findings from a study on health workers' job preferences to improve rural retention in Timor-Leste, which reported that professional development provided the highest satisfaction with jobs, followed by working conditions.²² A study among health workers in Ghana reported that among the four factor model of non-financial incentives, opportunities for continuing professional development was ranked second predictor of motivation and retention.¹⁸

Transportation, which ranked last among the non-financial incentive packages in this study, was not mentioned in most of the studies reviewed. This may be due to the fact that most studies on motivation and retention of health workers reported on provision of transport allowance which is a financial incentive rather than provision of any means of transportation to the health workers.^{23,24}

Limitations of the study

The attributes used are limited to the six suggested during the from the FGDs because in DCE technique not too many attributes can be used for the sake of statistical quality and practical feasibility. However, the feasibility of implementation of the attributes is based on government policies as provided by the manager and policymaker interviews. The DCE survey has limited generalizability to other settings as the methodology is designed to be context specific.

Conclusion

The study demonstrated the use of Discrete Choice experiment to identify non-financial incentive packages that can be used to retain health workers through the choices and

trade-offs they make related to hypothetical incentive packages.

Recommendations

- It is recommended that the various incentive packages be costed. The relative cost of each of the incentive packages will guide policymakers to identify the most feasible, affordable, and sustainable motivation and retention packages to be implemented and the mode of implementation. This will be included as part of the investment case for the optimization of the Health Extension Program, and guide advocacy for funding from donors and development partners.
- The conduct of additional DCE surveys across other regions of Ethiopia to enable a comparative analysis of retention and motivation factors that could inform national policy is also recommended. In addition, further research on Workload Indicator Staffing Needs (WISN) study to estimate HEW requirements relative to their workload is recommended so as to help in developing comprehensive incentive package for the study population.

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Author's Contributions

All authors contributed equally to drafting or reviewing the article and gave final approval of the version to be published.

Disclaimer

The views expressed in the article are those of the authors and not of the affiliated institutions.

Ethical Approval

The research was conducted using rigorous ethical standards and ethical approvals were obtained from the Ethiopian Public Health Association's Institutional Review Board and research approval was granted on 13 July 2021 with reference number EPHA/OG/355/21.

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