



BMJ Open Community health workers' job satisfaction in Ebola-stricken areas of Sierra Leone and its implication for COVID-19 containment: a cross-sectional mixed-methods study

Osman Koroma,^{1,2} Yanhua Chen ,³ Peicheng Wang,³ Geer Chen,⁴ Qian Lin,⁵ Ming Yen Cheung,⁶ Jiming Zhu ¹

To cite: Koroma O, Chen Y, Wang P, *et al.* Community health workers' job satisfaction in Ebola-stricken areas of Sierra Leone and its implication for COVID-19 containment: a cross-sectional mixed-methods study. *BMJ Open* 2021;**11**:e051645. doi:10.1136/bmjopen-2021-051645

► Prepublication history and additional supplemental material for this paper are available online. To view these files, please visit the journal online (<http://dx.doi.org/10.1136/bmjopen-2021-051645>).

OK and YC are joint first authors.

Received 27 March 2021

Accepted 24 August 2021



© Author(s) (or their employer(s)) 2021. Re-use permitted under CC BY-NC. No commercial re-use. See rights and permissions. Published by BMJ.

For numbered affiliations see end of article.

Correspondence to

Dr Jiming Zhu;
jimingzhu@tsinghua.edu.cn

ABSTRACT

Objectives Community health workers (CHWs) played important roles in supplementing scarce healthcare workforce in Sierra Leone during the Ebola outbreak, causing the government to launch the National Community Health Worker Policy 2016–2020. This study evaluated this ambitious policy and examined CHWs' sustainability through their job satisfaction and the underlying factors to inform new policy recommendations, especially the implication for COVID-19 containment.

Design A mixed-methods approach applying structured questionnaires and semistructured interviews.

Setting and participants 188 CHWs in Bombali District (key Ebola-stricken areas) of Sierra Leone, 184 of them participated in follow-up interviews.

Primary and secondary outcome measures

Quantitative and qualitative elements were triangulated to improve robustness of investigation: job satisfaction was measured by the Minnesota Satisfaction Questionnaire (MSQ), and factors associated with job satisfaction were identified through thematic analysis and multivariable logistic regression.

Results The MSQ score of CHWs in Sierra Leone was 65.09, extremely low even among low-income and middle-income countries. Five themes (grouped from 16 subthemes) emerged through the semistructured interviews and were tested quantitatively. Payment was CHWs' top concern. Low stipend and payment tardiness were significantly associated with dissatisfaction. Those with Ebola experience were 5.20 times (95% CI 1.51 to 17.95, $p=0.009$) more likely to be dissatisfied. This study also found that working conditions, medical material supplies and career development were far from what the CHW policy promised. CHWs' commitment was the only 'positive' theme, and their intrinsic job satisfaction (mean=3.61) was much higher than the extrinsic job satisfaction (mean=2.72).

Conclusions Some critical components of the 2016 National Community Health Worker Policy, aiming to promote CHWs and strengthen primary healthcare, have severe shortfalls in practice. The Sierra Leone government should address the underlying factors that have impaired CHWs' job satisfaction to ensure

Strengths and limitations of this study

- The mixed-methods approach, based on first-hand data, enables us to explore indepth mechanisms, contributing to the gap between policy design and the actual implementation.
- Quantitative and qualitative elements are triangulated to strengthen the reliability and validity of our findings, and the rich qualitative materials help to better elaborate on the research concerns—'putting flesh on the bones'.
- The original investigation covers all the three categories of community health workers in Sierra Leone: quantitatively, the sample size is not big enough for subgroup regression analysis; on the other hand, most findings, as a whole group, still hold robustly.
- One limitation of the study is the reliance on a cross-sectional survey of community health workers in Bombali District only, which may not be completely representative of the whole country; however, Bombali District is a typical district and a good representative of a relatively small country.

sustainability of its CHW network, especially during the combat against COVID-19.

INTRODUCTION

Community health workers (CHWs) play a major role in disease prevention and control in many low-income and middle-income countries (LMICs).^{1 2} They usually serve as the bridge between the community and public health services.³ Recently, CHWs have become increasingly important in health systems as they are considered a key solution to the scarcity of health personnel, especially in LMICs.⁴ Lessons learnt from the Ebola outbreak have indicated that CHWs are in a unique position to aid the healthcare system by providing surveillance coverage and

mobilising communities during outbreaks.^{5,6} In addition, studies suggest that CHWs can provide effective health and social care support to fight COVID-19.⁷⁻⁹

In 2012, Sierra Leone first established a CHW programme as part of the government's efforts to provide equitable care and access to maternal, newborn and paediatric services. CHWs complemented existing health-care workforce, especially during the Ebola outbreak from 2014 to 2016.¹⁰ They were instrumental in the fight against the virus as contact tracers, community mobilisers and health promoters, and they conducted community surveillance activities and reported suspected Ebola cases to public authorities. To recognise CHWs' contributions during the Ebola epidemic and to further strengthen comprehensive primary healthcare, the government of Sierra Leone launched a revised CHW programme officially called the National Community Health Worker Policy 2016–2020 as part of its health sector recovery strategy.¹¹ In this policy, CHWs are defined as community-based lay health workers who are trained in the national CHW training programme. They are often volunteers who are trained to provide basic health services at the community level by identifying people who are sick or at risk of being sick. They also conduct community-based surveillance and reporting of any events related to diseases or events affecting the health of the community. CHWs in Sierra Leone are classified into different categories; among them are the general community health workers (GCHWs), peer supervisors (PSs) and traditional birth attendants (TBAs). PSs are CHWs who have served the workforce with a demonstrated record of high-quality performance for at least 1 year. TBAs are CHWs but are mostly women who provide care and support to pregnant women. CHWs need regular supportive supervision (from peripheral health unit and PSs) to provide high-quality services and report on time and in a high-quality manner. Despite the volunteer nature of the work, the role of CHWs requires a substantial amount of time, and to keep them motivated the new CHW policy advocates for the provision of both financial incentives and logistics support to all CHWs. For instance, they are provided with drugs, commodities and other supplies they need to do their jobs. Financially, they receive remuneration and logistics support (to cover transport or phone top-up and others) per month.

During the Ebola outbreak, CHWs in Sierra Leone played an indispensable role in the health system, where skilled health workers were in severe shortage. Moreover, the outbreak in Sierra Leone caused long-term impairment in the local health system because Ebola deaths were disproportionately concentrated among doctors, nurses and midwives, causing 6.85% mortality rate compared with 0.06% among the general population.¹² Since the global COVID-19 pandemic, all CHWs in Sierra Leone have received comprehensive training with technical support from UNICEF.¹³ Despite their great contributions to the previous and undergoing outbreaks, the level of commitment among CHWs to continue serving

in future epidemics given the hardship they experienced from Ebola is unknown, and the implementation of the ambitious CHW policy has not been evaluated.

In addition, CHWs' continued involvement relies largely on their satisfaction and influencing factors. Thus, a systematic understanding of their job satisfaction is necessary to improve CHWs' performance and retention.¹⁴ For example, higher levels of motivation and job satisfaction were found helpful in decreasing CHWs' intention to leave.¹⁵ Sources of CHWs' satisfaction and motivation were diverse, such as helping the community, improving health, community respect, pride, appreciation, recognition, financial incentives, skill utilisation, working condition or hope for employment.^{14,16-18} The political factor is known to influence the impact and sustainability of community health programmes.¹⁹ Under the newly launched CHW policy, incentives and remuneration, training, working conditions, and professional development of CHWs are supposed to improve. Therefore, the timing calls for the need to assess CHWs' job satisfaction and potential policy recommendations to ensure the effectiveness and sustainability of the CHW network in Sierra Leone, especially in areas devastated by the Ebola outbreak.

This study aims to examine the job satisfaction of CHWs in Bombali District, a key Ebola-affected area in Sierra Leone. The objectives are threefold: (1) to explore CHWs' satisfaction and the associated factors, especially when taking into account the Ebola-related experience in Sierra Leone; (2) to evaluate the impact of the CHW policy after its embarkment on CHWs' daily practice; and (3) to inspire policy recommendations for the improvement of CHWs' operation, especially when facing the COVID-19 pandemic which highly resembles the previous Ebola epidemic.²⁰⁻²²

METHODS

Study setting and design

The study has been conducted in Bombali District, the second most populous district in northern Sierra Leone, with an estimated population of 606 183 in 2015.²³ The Human Development Index of Bombali District is low (0.453).²⁴ Bombali has 16 community health centres, 18 community health posts, 48 maternal child health posts, 1 government hospital, 1 military hospital, 1 community hospital, 3 mission clinics, 3 mission hospitals and 3 private clinics.²⁵ During the Ebola outbreak, Bombali was one of the most heavily affected districts in Sierra Leone.²⁶ Bombali was also among the last provinces declared Ebola-free on 13 September 2015.

This study adopted a mixed-methods approach to fully understand CHWs' job satisfaction and associated factors in Ebola-stricken areas of Sierra Leone. The investigation consisted of two parts. The first part was a structured questionnaire. We used the original short version of the Minnesota Satisfaction Questionnaire (MSQ) and CHWs' sociodemographic characteristics

(eg, gender, marital status, educational level, years of working, remuneration). The MSQ is a widely accepted measure of satisfaction with various aspects of benefits, personal development and organisational culture using intrinsic and extrinsic scales.^{27 28} Intrinsic satisfaction, generated from the presence of intrinsic factor, is how people feel about their job tasks that are related to their success; extrinsic satisfaction comes from kinds of external factors such as salary or work situation.^{29 30} Its short version had 20 items with 5 Likert-type scaling, ranging from 1 (extremely dissatisfied) to 5 (extremely satisfied), with 3 as a neutral score. The second part was made of six open questions, digging into CHWs' job satisfaction from multiple angles: biggest challenges of this job, the Ebola experience, reasons for being a CHW, intention to leave, improvement suggestions and future career plan. For our semistructured interview, please see online supplemental appendix.

The quantitative data (the structured questionnaire) were analysed simultaneously with the qualitative materials (generated through the six open questions). The quantitative and qualitative studies were triangulated to inform answers to our research question and enhance the robustness of our investigation.³¹

Sampling and data collection

Bombali had 11 rural villages which were hotspot areas during the Ebola epidemic, namely Rosint, Manor, Gbassia, Sawalia, Yelisanda, Rosanda, Masuba, Patebanamarank, Makai, Rofutha and Sengbeh. There were an estimated 500 CHWs in these villages, and between 1 and 15 CHWs in these villages were randomly selected to participate in our research, among whom 220 CHWs were selected in this research. After vetting, there were 188 responses qualified, yielding a response rate of 85.5%.

Data were collected during the period of February–March 2020. The CHW focal person in Bombali District requested PSs to inform CHWs under their supervision about the study; with their written consent, CHWs participated in the investigation. They answered the structured questionnaire directly. For the qualitative element, some CHWs answered these open questions in writing directly; in many cases, the trained field investigators conducted semistructured interviews based on these open questions. These interviews were conducted at participants' homes to maintain their privacy. Interviews lasted approximately 30 min in local languages (ie, Themne or Krio). SLL 50 000 (£4.35) for each participant was provided to compensate CHWs for their time in filling out the questionnaire and receiving the interview. In theory, sampling should be continued until data saturation was achieved. The fieldwork in Sierra Leone did not allow us to carry out the semistructured interviews while simultaneously conducting the analysis. Consequently, the qualitative study also intended to cover all the 188 participants, which we expect would give us more than sufficient variation. Data saturation would be achieved earlier.

Analysis

For the quantitative study, continuous variables were reported as mean (SD) and categorical variables were presented as number (percentage). Multivariable logistic regression analysis was used to examine all demographics of the CHWs (eg, gender and marital status) and job characteristics (eg, occupation) associated with job satisfaction. As we used a 5 Likert-type scale, respondents with a score less than 3 were classified as dissatisfied in regression. The Cronbach's α coefficient of MSQ was 0.9503 in our research, confirming internal consistency reliability.

In the qualitative study, we used thematic analysis. In order to conduct the thematic analysis, all qualitative information was translated to English, and all English transcriptions were uploaded into NVivo software. The themes were coded and analysed. In order to analyse the factors that affect CHWs' job satisfaction from the six open questions, instead of an entirely inductive approach, knowledge of those factors from similar research in this area and our own quantitative analysis was first presented and added deductively from within the data.³² In other words, the coding framework and emerging themes were identified in an inductive and interactive process. Pragmatically, inspired by the quantitative element of this study, the literature, the fieldwork experience and the Sierra Leone context, YC and OK developed a preliminary coding framework after full review of the qualitative data. Refining the framework involved constant comparison and discussion with JZ and MYC, especially in relation to different combinations of subthemes.

Statistical analyses were performed using Stata (V.16.1) and NVivo (V.12 Plus). Two-tailed *p* values of less than 0.05 were considered statistically significant.

Patient and public involvement

Patients and the public were not involved in the study.

RESULTS

Participant characteristics

Of the total 188 participants (CHWs), 99 were GCHWs, 34 were TBAs and 55 were PSs (table 1). The participants featured more male (67.0%) and a large age span, with most in their 30s (40.6%) or 20s (36.9%), and a high proportion of married people (69.2%). Majority (almost 70%) of these CHWs were married. Regarding educational level, 29.8%, 60.1% and 10.1% of CHWs had received basic education, secondary education, or a certificate and above, respectively. More than half (53.7%) had worked as CHWs for 5 years or more; while this is a volunteer job, in terms of workload, a slightly larger proportion (57.5%) worked more than 5 hours per day.

Five themes emerged through the qualitative analysis: payment, Ebola experience, working conditions and medical material supplies, career development, and commitment (table 2). We coded all the participants, but no new themes (including subthemes) emerged after coding the 151st participant. Data saturation was achieved.

Table 1 Sociodemographic and work-related characteristics of participants

Variables	n (%)
Gender	
Male	126 (67.0)
Female	62 (33.0)
Age (years)*	
≤20	4 (2.1)
21–30	69 (36.9)
31–40	76 (40.6)
40–50	31 (16.6)
>50	7 (3.7)
Marital status	
Single	55 (29.3)
Married	130 (69.2)
Divorced	3 (1.6)
Educational level	
Basic education	53 (29.8)
Secondary education	113 (60.1)
Certificate and above	19 (10.1)
Occupation level	
General community health worker	99 (52.7)
Traditional birth attendance	34 (18.1)
Peer supervisor	55 (29.3)
Experience of Ebola	
Yes	95 (50.5)
No	93 (49.5)
Work tenure as community health worker (years)	
<5	87 (46.3)
≥5	101 (53.7)
Working hours/day	
≤5	80 (42.6)
>5	108 (57.5)
Remuneration	
SLL 50 000–100 000 (£4.35–8.69)	122 (64.9)
SLL 100 000–200 000 (£8.69–17.38)	66 (35.1)
Logistics support	
SLL 30 000–50 000 (£2.61–4.35)	128 (68.1)
SLL 50 000–100 000 (£4.35–8.69)	60 (31.9)
Remuneration intervals	
Monthly and less	38 (20.2)
Quarterly	150 (79.8)
Logistics support intervals	
Monthly and less	27 (14.4)
Quarterly	161 (85.6)

In 2020, £1 was equivalent to SLL 11 507.3.

*Age variable has one missing data; thus, the total sample does not add up to 188.

SLL, Sierra Leonean Leone.

Following some qualitative studies,³² we reported the frequency of each subtheme, although we understood that this would not be statistically meaningful. Each theme along with relevant qualitative and quantitative findings is illustrated in detail in the following sections. It should also be noted that, although we presented each theme separately, they were essentially connected. Whenever necessary, we would show the connection.

Theme 1: payment

The payment provided through the National Community Health Worker Policy contains remuneration and the logistics support which is meant to cover CHWs' day-to-day volunteer work. According to our survey (table 1), nearly 65% of the CHWs earned a monthly remuneration of only SLL 50 000–100 000 (£4.35–8.69), and more than 68% of the CHWs received a monthly logistics support of merely SLL 30 000–50 000 (£2.61–4.35). Even worse, most CHWs reported that the remuneration (79.79%) and logistics support (85.64%) were given quarterly; it means around 80% of payments were delayed.

The MSQ result showed that CHWs were most dissatisfied with their payment. Among all the 20 MSQ items, the mean score of the payment item ('my pay and the amount of work I do') was the lowest (1.74 out of 5); only 9.0% of CHWs were satisfied with this item (table 3). The qualitative data confirmed this. As high as 143 of the 188 participants expressed their concern over the low payment: "(The biggest challenge is) I don't receive (enough) payment from this job" (#66, female, TBA, quote 1, table 2). Compared with 'the risk involved in the job', 'the cost of living' and 'the job we are doing', the current payment was simply too low and CHWs wanted an increase in their payment (quote 1, table 2). In addition, higher payment did work—our logistic regression results proved that the CHWs receiving higher remuneration (OR=0.06; 95% CI 0.01 to 0.39) and larger logistics support (OR=0.04; 95% CI 0.00 to 0.45) had lower odds of dissatisfaction (table 4).

Another serious problem identified regarding payment was tardiness. CHWs were more likely to report dissatisfaction if they received remuneration quarterly (OR=8.81; 95% CI 1.38 to 56.40) compared with monthly payment (table 4). The qualitative analysis echoed this: "They (government) always delay paying us" (#36, female, GCHW, quote 2, table 2).

Theme 2: Ebola experience

In this survey, there were 95 respondents who worked during the Ebola epidemic. According to the quantitative analysis, CHWs who had Ebola experience were 5.20 times (95% CI 1.51 to 17.95) more likely to be dissatisfied with their job compared with those without Ebola experience (table 4). The qualitative analysis figured out three subthemes in relation to reasons why Ebola experience significantly reduced CHWs' job satisfaction: distrust and fear from the community, risk of exposure, and heavy workload. CHWs were selected from their

Table 2 Thematic analysis with selected quotations about the influencing factors of job satisfaction

Theme	Subtheme	Quote number	Selected quotations	Frequency
Theme 1: payment	Stipend amount	1	<p>“The payment we are receiving is very minimal compared to the risk involve in the job.” (#129, male, GCHW)</p> <p>“Our money they give us is too small.” (#180, male, GCHW)</p> <p>“(I want) increase of payment.” (#18, male, GCHW)</p> <p>“(The biggest challenge is) I don’t receive (enough) payment from this job.” (#66, female, TBA)</p> <p>“I also want them to make an increase in payment because the cost of living now is different.” (#60, male, PS)</p> <p>“I also want a decent payment at least that is appreciative of the job we are doing.” (#79, male, PS)</p> <p>“My biggest challenge has always been the delay or deficiency of logistics support.” (#23, male, GCHW)</p> <p>“I think the payment should be increase as well as logistics support.” (#63, male, PS)</p> <p>“I want to also suggest an improvement in salary and logistics supply.” (#160, female, GCHW)</p>	143
	Tardiness	2	<p>“During Ebola, the payment is done monthly, but for now is quarterly.” (#11, male, PS)</p> <p>“They (government) always delay paying us.” (#36, female, GCHW)</p> <p>“During the Ebola, they pay us on time, I don’t know what the problem is now.” (#53, male, PS)</p> <p>“Delaying our payment is a challenge for us.” (#60, male, PS)</p> <p>“They should make our payment regularly.” (#13, male, GCHW)</p> <p>“There’s always a delay in giving logistics support.” (#37, male, PS)</p> <p>“In most cases, the logistics support is not on time.” (#93, male, GCHW)</p>	76
Theme 2: Ebola experience	Distrust and fear from the community	3	<p>“One of the challenges I face in this job is that sometimes community members are stubborn to take the health advice we are giving them.” (#61, male, PS)</p> <p>“There is also a lack of understanding from the community members.” (#81, male, PS)</p> <p>“The fear within the community during the Ebola makes it difficult to do our job. When we give them bed nets they will refuse it and accuse us of putting medicine that will kill them.” (#70, male, PS)</p> <p>“One of the things is fear the people have for us. They think we are working for the government to kill people. If we give them anything like soap or medicine, they will throw it away.” (#77, male, PS)</p> <p>“Working during the Ebola epidemic was like a war between the people and the healthcare workers. They saw us as killers hired by the government.” (#111, male, PS)</p> <p>“Most community members don’t trust us and they see our job as promoting the virus. They lack the trust of the government because of the virus, so they see us as agents of the government.” (#3, male, GCHW)</p> <p>“There was a lot of fear and mistrust from the community people about the Ebola virus. For example, if you identify someone who is sick and you want to call an ambulance, people will become aggressive with you.” (#75, male, PS)</p>	31
	Risk of exposure	4	<p>“I feared I would be infected thus there was immense pressure from my family to quit the job.” (#54, male, PS)</p> <p>“The challenges are numerous since the Ebola virus was deadly and working in such condition is a matter of life and death to all health workers.” (#129, male, GCHW)</p>	10
	Heavy workload	5	<p>“During Ebola, it was difficult to take a break because by then the job was very demanding; but now it is possible.” (#158, female, GCHW)</p> <p>“During Ebola, we were working long periods while today we are not.” (#159, male, GCHW)</p>	3
Theme 3: working conditions and medical material supplies	Job-related tools and equipment	6	<p>“Since I started working, they promised to give me rain gear, flashlights (to work at night for emergency cases), and bicycle. But I have not received any of these things yet. I only received the T-shirt which is like a uniform. And that one has already worn out.” (#67, male, PS)</p> <p>“(The biggest challenge is) the delay in supply of my work-related equipment.” (#38, female, TBA)</p> <p>“In most cases, it is difficult to get hand gloves and vehicle (ambulance) to take a patient to the clinic.” (#10, female, TBA)</p> <p>“The government should always supply tools and equipment to do our job.” (#141, male, GCHW)</p> <p>“There is always a shortage of equipment to do the job.” (#80, male, PS)</p> <p>“When I joined the said they will give me all the equipment but I only received a few of them.” (#114, male, GCHW)</p> <p>“Another important thing I want to point out is they should be changing the old kit to new ones.” (#9, female, TBA)</p> <p>“Equipment and tools for our job should be provided regularly.” (#67, male, PS)</p> <p>“...during Ebola outbreak...there was escalated exposure to the virus due to inadequate medical protective wears.” (#41, male, GCHW)</p>	78
	Transportation challenges	7	<p>“The distance we covered for our routine is very long and there are no motorcycles to ease the challenge.” (#101, male, GCHW)</p> <p>“The road network is very poor and that creates a big challenge for us.” (#154, female, TBA)</p> <p>“I will recommend that they supply us bikes and that will be good. I live far away from PHU (Peripheral Health Units) and going there is very difficult at times. So, if we have bikes that would help the burden of travel.” (#67, male, PS)</p> <p>“The road network is bad and so taking pregnant women to the hospital was difficult. This was especially the case when the government required every pregnant woman to give birth at the hospital during the Ebola epidemic.” (#12, female, TBA)</p> <p>“One of the challenges I faced working during the Ebola epidemic was transportation. You see, I was a contact tracer and I have cover large distance each time I go out to do my tracing.” (#74, male, PS)</p>	33

Continued

Table 2 Continued

Theme	Subtheme	Quote number	Selected quotations	Frequency
	Medication shortage	8	<p>“(The biggest challenge is) supply of medicine to CHWs.” (#4, male, PS)</p> <p>“There is always a lack of medical supply or insufficient drugs.” (#127, male, GCHW)</p> <p>“We don’t have access to drug supply and that is affecting my job. That is embarrassing when we fail to fulfil our promises to the community that we would bring drugs to them. Whenever we ask PHU (Peripheral Health Units) for supply they would tell us that supply has run out. The community people would be expecting drugs and when they see us with no drugs then it becomes very embarrassing and shameful. That would make them not to trust us.” (#76, male, PS)</p> <p>“During the Ebola outbreak we were not provided with drugs and equipment, and this affected my service delivery. Now that Ebola is finished, I am facing the same problem.” (#58, male, PS)</p> <p>“(Should) make way for us to be able to supply drugs to people as needed.” (#112, male, PS)</p>	14
	General working conditions and welfare	9	<p>“The conditions for community health workers to provide services should be improved.” (#44, male, PS)</p> <p>“Overall, any improvement in working conditions could make our job more convenient.” (#85, male, PS)</p> <p>“If the welfare of workers is improved, I will stay in the job.” (#41, male, GCHW)</p>	10
Theme 4: career development	Gain experience and develop skills through training and practice	10	<p>“I love this job because it has increased my knowledge.” (#16, female, TBA)</p> <p>“I will continue to work since I want to know more about health.” (#128, male, GCHW)</p> <p>“I want to gain more experience.” (#41, male, GCHW)</p> <p>“I would be happy if they could also give us more training.” (#3, male, GCHW)</p> <p>“...if they can create a way for me to get more training and growth in the work, it would be great.” (#54, male, PS)</p> <p>“...if there is more training for our job.” (#7, female, TBA)</p> <p>“The government should organise continuous training about community health for CHWs.” (#184, female, GCHW)</p> <p>“Since I was trained more than 5 years ago, till now I have not received another training. Even when I was working during the Ebola outbreak, they didn’t organise training.” (#55, male, PS)</p>	39
	Lack of employment opportunities	11	<p>“For now I will continue (CHW position) to serve because this is the only job that I know.” (#22, female, TBA)</p> <p>“Yes I will. Because I don’t have a choice for now.” (#116, male, GCHW)</p>	21
	Job advancement	12	<p>“There is no proper advancement in the job.” (#140, male, PS)</p> <p>“I suggest that they should give ways for advancement in the job.” (#35, male, GCHW)</p> <p>“If the government can make a way for us to advance in this job that would be good.” (#178, female, TBA)</p> <p>“I think they should make career -building opportunities for us.” (#74, male, PS)</p>	21
	Government support	13	<p>“Getting recognition from the government would be very important and helpful in boosting confidence and morale amongst us.” (#143, male, GCHW)</p> <p>“They should try and make it more formal otherwise many people will leave.” (#73, male, PS)</p> <p>“The decisions making process should involve everyone.” (#82, male, PS)</p> <p>“Exclusion from the administrative decision is affecting our morale in the job.” (#82, male, PS)</p> <p>“...lack of support from the government.” (#13, male, GCHW)</p> <p>“One of the challenges I face is we don’t get recognition. We should get an award from the government.” (#142, male, PS)</p>	7
Theme 5: commitment	Motivation to serve	14	<p>“I will not quit because I want to render my services to my community and my nation as a whole.” (#5, female, GCHW)</p> <p>“I want to serve and help my people.” (#67, male, PS)</p> <p>“I choose this job because I want to help my people.” (#75, male, PS)</p> <p>“I love my community and I want to see people healthy.” (#62, male, PS)</p> <p>“(I will work as CHW in the TBA) because I have been chosen by my community.” (#97, female, TBA)</p> <p>“I like to volunteer and serve my community.” (#152, female, GCHW)</p>	51
	Fulfilment	15	<p>“What I like about the job honestly speaking it is the satisfaction I get when I save lives and when I get positive feedback from my people. It gives me the feeling that my people appreciate what I am doing.” (#54, male, PS)</p> <p>“I love the respect and admiration I get from the community people.” (#55, male, PS)</p> <p>“...because helping people makes me happy.” (#117, female, PS)</p> <p>“I feel like I am creating an impact in people’s lives.” (#141, male, GCHW)</p> <p>“I have developed a reputation and become famous since I joined.” (#74, male, PS)</p>	14
	Teamwork	16	<p>“I would be happy if more CHWs are recruited.” (#15, male, GCHW)</p> <p>“I love the fact that we always work as a team.” (#151, male, GCHW)</p> <p>“I am a team worker, and most of us work together and that makes the job easier for me.” (#159, male, GCHW)</p>	4

CHW, community health worker; GCHW, general community health worker; PS, peer supervisor; TBA, traditional birth attendant.

communities and they were supposed to have a good relationship with community members. However, during the Ebola epidemic, there was tension between CHWs and the people they served. Some community members even thought that CHWs were ordered by the government to kill them: “One of the things is fear the people have for

us. They think we are working for the government to kill people. If we give them anything like soap or medicine, they will throw it away” (#77, male, PS, quote 3, table 2). In addition, it was self-evident that working at the front line during the Ebola epidemic was risky: “The challenges are numerous since the Ebola virus was deadly and

Table 3 Job satisfaction of participants

Items	Mean (SD)	Satisfied (score 4–5), n (%)
MSQ	3.25 (0.06)	–
Intrinsic job satisfaction	3.61 (0.07)	–
Q4. The chance to be ‘somebody’ in the community	4.11 (0.08)	145 (77.1)
Q10. The chance to tell people what to do	3.97 (0.08)	136 (72.3)
Q9. The chance to do things for other people	3.81 (0.08)	111 (59.0)
Q11. The chance to do something that makes use of my abilities	3.80 (0.10)	122 (64.9)
Q2. The chance to work alone on the job	3.74 (0.09)	117 (62.2)
Q20. The feeling of accomplishment I get from the job	3.71 (0.09)	119 (63.3)
Q1. Being able to keep busy all the time	3.64 (0.10)	130 (69.2)
Q7. Being able to do things that don’t go against my conscience	3.63 (0.09)	113 (60.1)
Q16. The chance to try my own methods of doing the job	3.63 (0.09)	104 (55.3)
Q3. The chance to do different things from time to time	3.54 (0.10)	98 (50.1)
Q15. The freedom to use my own judgement	3.35 (0.09)	84 (44.7)
Q8. The way my job provides for steady employment	2.38 (0.08)	29 (15.4)
Extrinsic job satisfaction	2.72 (0.05)	–
Q19. The praise I get for doing a good job	3.93 (0.09)	136 (72.3)
Q18. The way my coworkers get along with each other	3.32 (0.08)	89 (47.3)
Q6. The competence of my supervisor in making decisions	3.15 (0.08)	85 (45.2)
Q5. The way my boss handles his/her workers	2.97 (0.09)	74 (39.4)
Q12. The way company policies are put into practice	2.51 (0.08)	34 (18.1)
Q17. The working conditions	2.11 (0.08)	22 (11.7)
Q14. The chances for advancement on this job	2.04 (0.07)	17 (9.0)
Q13. My pay and the amount of work I do	1.74 (0.07)	17 (9.0)

MSQ, Minnesota Satisfaction Questionnaire.

working in such condition is a matter of life and death to all health workers” (#129, male, GCHW, quote 4, [table 2](#)). Some CHWs also mentioned that the workload during the Ebola epidemic was heavier than usual and their work time was extended (quote 5, [table 2](#)).

In addition, taking into account both themes 1 and 2, we found that some CHWs who worked during the Ebola epidemic received payments on time during Ebola but suffered from delay after the epidemic. They developed distrust towards the system: “During the Ebola, they pay us on time, I don’t know what the problem is now” (#53, male, PS, quote 2, [table 2](#)). This may bring some psychological impact on CHWs’ commitment when fighting future outbreaks.

Theme 3: working conditions and medical material supplies

Quantitative analysis showed that CHWs had low scores in working conditions: the average score being 2.11 and only 11.7% of participants being comfortable with working conditions ([table 3](#)). In line with this, CHWs expressed their expectation that the general working conditions should be improved (quote 9, [table 2](#)).

Job-related tools, equipment and transportation support were inadequate: “The government should always

supply tools and equipment to do our job” (#141, male, GCHW, quote 6, [table 2](#)). This natural requirement was the second most mentioned subtheme. In addition, two common subthemes for rural primary healthcare were transportation challenges (such as poor road network and long travel distance) and medication shortage (quotes 7 and 8, [table 2](#)).

Connecting themes 2 and 3, all the three specific subthemes were intensified during the Ebola epidemic. Job-related tools and equipment, such as personal protective equipment (PPE), could be a matter of life or death during an outbreak, far beyond job satisfaction: “... during Ebola outbreak...there was escalated exposure to the virus due to inadequate medical protective wears” (#41, male, GCHW, quote 6, [table 2](#)). The transportation support was particularly important in an emergency response: “One of the challenges I faced working during the Ebola epidemic was transportation. You see, I was a contact tracer and I have cover large distance each time I go out to do my tracing” (#74, male, PS, quote 7, [table 2](#)). The medication shortage could contribute to the distrust presented in theme 3: “We don’t have access to drug supply and that is affecting my job. That is embarrassing

Table 4 Factors influencing job satisfaction by multivariate logistic regression

Variable	OR (95% CI)	P value
Age (years)	0.62 (0.37 to 1.03)	0.066
Gender (ref: male)		
Female	0.70 (0.22 to 2.26)	0.554
Marriage status (ref: single)		
Married	7.55 (2.42 to 23.54)	<0.001
Divorced	11.54 (0.56 to 236.29)	0.112
Educational level (ref: basic education)		
Secondary education	0.77 (0.24 to 2.42)	0.653
Certificate and above	5.37 (0.83 to 34.59)	0.077
Occupation (ref: GCHW)		
TBA	1.29 (0.30 to 5.49)	0.728
PS	0.82 (0.18 to 3.66)	0.797
Work tenure (years)	1.00 (0.99 to 1.01)	0.793
Work time (ref: ≤5 hours/day)		
>5 hours/day	0.92 (0.36 to 2.35)	0.859
Experience of Ebola (ref: no experience)		
Yes	5.20 (1.51 to 17.95)	0.009
Remuneration (ref: SLL 50 000–100 000; £4.35–8.69)		
SLL 100 000–200 000 (£8.69–17.38)	0.06 (0.01 to 0.39)	0.003
Logistics support (ref: SLL 30 000–50 000; £2.61–4.35)		
SLL 50 000–100 000 (£4.35–8.69)	0.04 (0.00 to 0.45)	0.010
Remuneration interval (ref: monthly and less)		
Quarterly	8.81 (1.38 to 56.40)	0.022
Logistics support interval (ref: monthly and less)		
Quarterly	0.61 (0.06 to 6.11)	0.675

GCHW, general community health worker; PS, peer supervisor; ref, reference; SLL, Sierra Leonean Leone; TBA, traditional birth attendant.

because we often failed to keep the promise of providing drugs to the community. That will make them not to trust us” (#76, male, PS, quote 8, [table 2](#)).

Theme 4: career development

Around 90% of CHWs only had secondary education or below ([table 1](#)), and the ‘steady employment’ was the only MSQ intrinsic item with a mean score below 3.00 and a satisfaction rate around 15% ([table 3](#)). Some CHWs did lack employment opportunities—this was the only job they knew or there was no other choice (quote 11, [table 2](#)).

The volunteer nature of this job did not mean that CHWs did not need career pathways or job advancement: “I suggest that they should give ways for advancement in the job” (#35, male, GCHW, quote 12, [table 2](#)). The quantitative result also showed that job advancement was CHWs’ second most dissatisfied item (mean=2.04; 9.0% satisfied), in addition to payment ([table 3](#)). In contrast, CHWs wanted to gain experience and develop skills through training and practice: “The government should organise continuous training about community health for CHWs” (#184, female, GCHW, quote 10, [table 2](#)). Also, government support was essential: “One of the challenges I face is we don’t get recognition. We should get an award from the government” (#142, male, PS, quote 13, [table 2](#)). This was associated with the ‘Ebola experience’ theme and the ‘commitment’ theme, as CHWs demanded trust, praise and reputation.

Theme 5: commitment

CHWs were often community members who got motivated to serve: “I like to volunteer and serve my community” (#152, female, GCHW, quote 14, [table 2](#)). Accordingly, they achieved fulfilment from the job: “I love the respect and admiration I get from the community people” (#55, male, PS, quote 15, [table 2](#)). In addition, some CHWs also valued teamwork (quote 16, [table 2](#)).

All the four themes above were mainly ‘complaints’, while commitment was a ‘positive’ theme, showing that it was the intrinsic factor in the process of helping people that contributed to selecting and retaining many CHWs. The quantitative results echoed this finding. CHWs’ intrinsic job satisfaction (mean=3.61) was much higher than the extrinsic job satisfaction (mean=2.72). Additionally, the top four of the MSQ items were the chance to be ‘somebody’ in the community (mean=4.11; 77.1% satisfied), to tell people what to do (mean=3.97; 72.3% satisfied), the praise they got for doing a good job (mean=3.93; 72.3% satisfied) and to do things for other people (mean=3.81; 59.0% satisfied) ([table 3](#)).

DISCUSSION

This is the first study using a mixed-method approach to systematically explore CHWs’ job satisfaction and underlying factors in Ebola-stricken areas, as well as the first study on job satisfaction among CHWs on the experience of the Ebola virus epidemic. Based on our first-hand survey of 188 CHWs, the study identified 5 themes and 16 subthemes influencing job satisfaction; CHWs’ job satisfaction was assessed quantitatively through the MSQ, and

multivariate logistic regression was used to explore the association between the influencing factors and assessed job satisfaction. This approach ensures statistical and thematic exploration of the targeted issue.

CHWs' job satisfaction study uncovered many issues of Sierra Leone's newly implemented policy. The research found that the MSQ score was only 65.09 (mean score 3.25), denoting an overarching low job satisfaction among CHWs in Sierra Leone. In fact, they were less satisfied than their counterparts in many LMICs.^{18 33} For instance, the MSQ score of CHWs was 67.17 in Shenyang, China and 69.95 in Benxi, China, and the MSQ mean score was 3.78 in Volta, Ghana. The similarity was that CHWs' intrinsic job satisfaction was higher than their extrinsic job satisfaction.²⁸ However, the 2016 National Community Health Worker Policy was supposed to solve these extrinsic items, such as awards, working conditions and payment. The stipend (remuneration and logistics support) of the CHWs in Sierra Leone was extremely low, and it significantly affected CHWs' job satisfaction in a negative way, controlling for other factors. It was not surprising that payment lay at the very bottom of the MSQ ranking. Now confronting the COVID-19 pandemic, CHWs' payment in Sierra Leone should be increased according to their workload, cost of living and risks involved.

The 2016 National Community Health Worker Policy was designed to recognise CHWs' contributions during the Ebola epidemic, promote them and help them recover from Ebola. However, our study found that the Ebola experience had a significantly negative impact on CHWs' job satisfaction in Sierra Leone and many challenges facing CHWs remained. Half of the CHWs in our study experienced Ebola, and they had to cope with the risk of exposure and heavy workload, which were both 'bad experience'. It was not surprising that some research found 'bad experience' as a contributing factor to decreased job satisfaction.^{34 35} However, a striking finding was the payment tardiness after the Ebola epidemic. Although the 2016 National Community Health Worker Policy explicitly stated the payment amount per month, both qualitative and quantitative data showed that some CHWs were not paid on time (monthly) and remuneration interval significantly affected their job satisfaction. The remuneration interval (paid quarterly vs monthly or less) actually represented the largest odds ratio. Payment tardiness after the Ebola epidemic went against the new national policy and probably affected CHWs' morale. Actually, in the middle of the COVID-19 crisis, recent reports showed that all cadres of health workers, including CHWs in Sierra Leone, threatened strike action as they demanded incentives and compensation.³⁶ Any payment delay should be avoided now and after the COVID-19 crisis, for the sustainable development of CHWs.

Another conspicuous finding was the tension between the community people and CHWs during the Ebola epidemic. Usually, CHWs bridge the gap between health facilities and communities.¹¹ This was particularly true for the improved health service access and utilisation among

underserved populations,³⁷ and the importance of CHWs could not be overemphasised during Ebola or COVID-19. However, according to this study, people in the community were scared and suspicious due to the overwhelming stigma. They simply did not trust the government and CHWs; some even thought that CHWs were working for the government and spreading the virus to kill them. This could be a long-lasting disaster for those CHWs who were motivated by community recognition (a major reason why some CHWs chose this job, similar to other studies' findings).^{14 38 39} According to the CHW policy, selected CHWs who had served in the cadre for at least 1 year with good records were supposed to be officially recognised by the Sierra Leone Ministry of Health and Sanitation. Again, the interviews' results confirmed a gap in practice, leaving many CHWs disappointed and distrusted by people they served. Now confronting the COVID-19 pandemic, the Sierra Leone government should make every effort to help CHWs rebuild trust with the community.^{40 41}

The working conditions and medical supplies are also primary concerns of CHWs. Distance is a well-recognised factor for accessing healthcare services in LMICs.⁴² CHWs in Sierra Leone were hindered by many transportation challenges, such as poor road network and long distance to community, especially in a public health emergency such as Ebola and COVID-19. Moreover, inadequate medical equipment and essential medicines are key barriers affecting the quality of healthcare services in LMICs.⁴³ During an outbreak, PPE is a matter of life or death to CHWs, far beyond just job satisfaction, as we have noted previously that health workers had a disproportionately high death rate compared with the general public during the Ebola epidemic in Sierra Leone. Recognising this, the 2016 National Community Health Worker Policy explicitly stated that it would provide drugs and medical supplies, free of charge. However, according to our study, for many CHWs in Sierra Leone, even their PPE could not be secured. Buffer stocks system mentioned in the CHW policy seemed to be not as effective. Given that COVID-19 is more contagious than Ebola, more robust supply chain management should be considered to ensure CHWs' adequate working conditions and medical supplies.

Although some CHWs were frank about taking this job as there was no other career option, CHWs were generally a group motivated to serve communities and dedicated to help people. CHWs in Sierra Leone have high commitment, at least partially because of their good relationship with communities. During the Ebola epidemic, although CHWs were at high risk of exposure to the virus, they continued to perform social mobilisation and community engagement on Ebola prevention and control. However, CHWs' high motivation did not necessarily mean high job satisfaction and retention.⁴⁴ In this study, more than 90% of CHWs in Sierra Leone were not satisfied with chances for advancement on the job and over 80% did not feel comfortable with employment steadiness. Previous studies showed that CHWs often lacked a career ladder, which impacts the sustainability of health

projects.⁴⁵ The 2016 National Community Health Worker Policy was aware of this and promised to provide training, awards for outstanding work and career pathways. However, our study implied that policy implementation was another story. Government should provide steady and clear pathway, or even through training and licensure, to ensure robust CHW workforce.

Based on our findings, we would argue that to realise the sustainability of the CHW policy, several policy implications are recommended. (1) To strengthen the salary system, the Ministry of Health and Sanitation through the District Health Management Team should develop an effective mechanism whereby CHWs can receive their remuneration and logistics support as promised in the policy. (2) To improve existing training programmes, training that covers core competencies such as communication or outreach skills that focus on specific health topics should be organised. The government can even supplement some clinical mentoring and supervision training. (3) To improve working conditions, the District Health Management Team should look into the development of a more reliable system for distribution of medical supplies, tools and equipment. Moreover, as CHWs have to move around, especially in hard-to-reach areas, the provision of motorcycles or bicycles to CHWs will facilitate their movement or make their job easier. (4) To bolster compliance of communities, the health management committees at the community level should be formed with more responsibility of mobilising communities to adhere to preventative measures and encouraging the acceptance of treatment or drug distribution in the community. Additionally, CHWs should be honoured publicly to boost the image and trust between CHWs and the communities they serve.

Limitations

Self-reported data were obtained from a cross-sectional survey of CHWs, which might limit the reliability of some responses, and some participants might withhold some negative feedback. Although we believed that Bombali District was a typical district and a good representative of the country as a whole, there might be some regional differences that this study failed to catch. In addition, the quantitative sample size was relatively small and did not allow us to conduct subgroup regression analysis. Accordingly, refined differences among the three categories of CHWs could be discussed in a future research, although most findings in this study, as a whole group, still held robustly.

CONCLUSION

CHWs in Sierra Leone often have a high commitment to helping people. During the Ebola outbreak, CHWs stepped up to meet the enormous challenges, generate community awareness and spread messages of caution and hope in their communities. It has been proven in practice that CHWs can be very helpful and critical in emergency

preparedness and response. The 2016 National Community Health Worker Policy, aiming to nurture well-functioning CHWs as essential part of a resilient health system in Sierra Leone, still needs to be improved dramatically. CHWs' job satisfaction is extremely low, measured through the MSQ score of 65.09, with the intrinsic job satisfaction much higher than the extrinsic one. We have identified five themes, namely payment, Ebola experience, working conditions and medical material supplies, career development, and commitment, which play a major role in CHWs' job satisfaction. All the five themes identified actually relate to the purpose of initiating the 2016 National Community Health Worker policy, while our study implies that the policy implementation cannot meet the policy design. The low stipend, payment tardiness and the Ebola experience are all significantly associated with CHWs' low job satisfaction, controlling for all other factors. Sierra Leone has not learnt enough from the Ebola outbreak, and the same problems may repeat themselves in the COVID-19 pandemic if not properly addressed. Finally, several suggestions, such as strengthening the salary system, improving training programmes and working conditions, as well as bolstering compliance of communities, were recommended to realise the sustainability of the CHW policy.

Author affiliations

¹Vanke School of Public Health, Tsinghua University, Beijing, China

²District Health Management Team, Sierra Leone Ministry of Health and Sanitation, Freetown, Sierra Leone

³School of Medicine, Tsinghua University, Beijing, China

⁴PBC School of Finance, Tsinghua University, Beijing, China

⁵Institute for Hospital Management, Tsinghua University, Beijing, China

⁶China Primary Care, Shanghai, China

Contributors JZ, OK and YC were involved in the conception and design of the study. OK collected the data. Quantitative analyses were conducted by YC and PW and qualitative analyses by YC and OK, with support from JZ and MYC. OK, YC, GC, QL and PW wrote and revised the manuscript, with review and dramatic revisions by JZ and MYC. All authors read and approved the final manuscript.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent for publication Not required.

Ethics approval Ethical approval was obtained from the Institutional Review Board for Human Subject Research, Research Centre for Public Health at Tsinghua University (Beijing, China; reference no: THUSM/PHREC/2020400-007). The first author of this article is an official of Sierra Leone's Ministry of Health and Sanitation; verbal approval was obtained from the local district medical officer.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement Data are available upon reasonable request.

Supplemental material This content has been supplied by the author(s). It has not been vetted by BMJ Publishing Group Limited (BMJ) and may not have been peer-reviewed. Any opinions or recommendations discussed are solely those of the author(s) and are not endorsed by BMJ. BMJ disclaims all liability and responsibility arising from any reliance placed on the content. Where the content includes any translated material, BMJ does not warrant the accuracy and reliability of the translations (including but not limited to local regulations, clinical guidelines, terminology, drug names and drug dosages), and is not responsible for any error and/or omissions arising from translation and adaptation or otherwise.

Open access This is an open access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which

permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited, appropriate credit is given, any changes made indicated, and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>.

ORCID iDs

Yanhua Chen <http://orcid.org/0000-0001-6603-1975>

Jiming Zhu <http://orcid.org/0000-0003-3545-1525>

REFERENCES

- Lewin S, Munabi-Babigumira S, Glenton C, *et al*. Lay health workers in primary and community health care for maternal and child health and the management of infectious diseases. *Cochrane Database Syst Rev* 2010;2010:Cd004015.
- Baatiema L, Sumah AM, Tang PN, *et al*. Community health workers in Ghana: the need for greater policy attention. *BMJ Glob Health* 2016;1:e000141.
- John A, Newton-Lewis T, Srinivasan S. Means, motives and opportunity: determinants of community health worker performance. *BMJ Glob Health* 2019;4:e001790.
- The Lancet Global Health. Community health workers: emerging from the shadows? *Lancet Glob Health* 2017;5:E467–E67.
- Kieny MP, Dovlo D. Beyond Ebola: a new agenda for resilient health systems. *Lancet* 2015;385:91–2.
- Perry HB, Dhillon RS, Liu A, *et al*. Community health worker programmes after the 2013–2016 Ebola outbreak. *Bull World Health Organ* 2016;94:551–3.
- Haines A, de Barros EF, Berlin A, *et al*. National UK programme of community health workers for COVID-19 response. *Lancet* 2020;395:1173–5.
- Goldfield NI, Crittenden R, Fox D, *et al*. COVID-19 crisis creates opportunities for Community-Centered population health: community health workers at the center. *J Ambul Care Manage* 2020;43:184–90.
- Ballard M, Bancroft E, Nesbit J, *et al*. Prioritising the role of community health workers in the COVID-19 response. *BMJ Glob Health* 2020;5:e002550.
- Miller NP, Milsom P, Johnson G, *et al*. Community health workers during the Ebola outbreak in Guinea, Liberia, and Sierra Leone. *J Glob Health* 2018;8:020601.
- Sierra Leone Ministry of Health and Sanitation. National community health worker policy 2016;2020:2016.
- Evans DK, Goldstein M, Popova A. Health-care worker mortality and the legacy of the Ebola epidemic. *Lancet Glob Health* 2015;3:e439–40.
- Mutseyekwa T. Community health workers supporting community sensitization and awareness of COVID-19, 2020. Available: <https://www.unicef.org/sierraleone/stories/community-health-workers-supporting-community-sensitization-and-awareness-covid-19> [Accessed 13 Jan 2021].
- Winn LK, Lesser A, Meny D, *et al*. Motivation and satisfaction among community health workers administering rapid diagnostic tests for malaria in Western Kenya. *J Glob Health* 2018;8:e010401.
- Bonenberger M, Aikins M, Akweongo P. The effects of health worker motivation and job satisfaction on turnover intention in Ghana: a cross-sectional study. *Human Resources for Health* 2014;12:1–12.
- Mpembeni RNM, Bhatnagar A, LeFevre A. Motivation and satisfaction among community health workers in Morogoro region, Tanzania: nuanced needs and varied ambitions. *Human Resources for Health* 2015;13:1–10.
- Greenspan JA, McMahon SA, Chebet JJ. Sources of community health worker motivation: a qualitative study in Morogoro region, Tanzania. *Human Resources for Health* 2013;11:1–12.
- Bempah BSO. Determinants of job satisfaction among community health workers in the Volta region of Ghana. *Public Policy and Administration Research* 2013;3:1–11.
- Haines A, Sanders D, Lehmann U, *et al*. Achieving child survival goals: potential contribution of community health workers. *Lancet* 2007;369:2121–31.
- Anoko JN, Barry BR, Boiro H, *et al*. Community engagement for successful COVID-19 pandemic response: 10 lessons from Ebola outbreak responses in Africa. *BMJ Glob Health* 2020;4:e003121.
- Keshvardoust S, Bahaadinbeigy K, Fatehi F. Role of telehealth in the management of COVID-19: lessons learned from previous SARS, MERS, and Ebola outbreaks. *Telemed J E Health* 2020;26:850–2.
- Lee S, Yeo J, Na C. Learning from the past: distributed cognition and crisis management capabilities for tackling COVID-19. *American Review of Public Administration* 2020;50:729–35.
- Statistics Sierra Leone. 2015 population and housing census: summary of final results;2015.
- Global Data Lab. GDL report Sierra Leone-Bombali district 2017.
- UN Office for the Coordination of Humanitarian Affairs. Sierra Leone: Bombali district profile 2015.
- Gleason B, Redd J, Kilmarx P, *et al*. Establishment of an Ebola Treatment Unit and Laboratory - Bombali District, Sierra Leone, July 2014-January 2015. *MMWR Morb Mortal Wkly Rep* 2015;64:1108–11.
- Weiss DJ, Dawis RV, England GW. Manual for the Minnesota satisfaction questionnaire. *Minnesota Studies in Vocational Rehabilitation* 1967;22:120–20.
- Li L, Zhang Z, Sun Z, *et al*. Relationships between actual and desired workplace characteristics and job satisfaction for community health workers in China: a cross-sectional study. *BMC Fam Pract* 2014;15:180.
- Hirschfeld RR. Does revising the intrinsic and extrinsic subscales of the Minnesota satisfaction questionnaire short form make a difference? *Educational and Psychological Measurement* 2000;60:255–70.
- Chang Y-C, Yeh T-F, Lai I-J, *et al*. Job competency and intention to stay among nursing assistants: the mediating effects of intrinsic and extrinsic job satisfaction. *Int J Environ Res Public Health* 2021;18:6436.
- Zhu J, Ariana P. Provider perspectives on general practice in Henan, China: a mixed-methods study. *BMJ Open* 2020;10:e036240.
- Lambert TW, Smith F, Goldacre MJ. Why doctors consider leaving UK medicine: qualitative analysis of comments from questionnaire surveys three years after graduation. *J R Soc Med* 2018;111:18–30.
- CX G, JL F, Chang Y. Factors associated with job satisfaction among Chinese community health workers: a cross-sectional study. *Bmc Public Health* 2011;11:1–13.
- Coyne I, Farley S, Axtell C. Understanding the relationship between experiencing workplace cyberbullying, employee mental strain and job satisfaction: a dysempowerment approach. *International Journal of Human Resource Management* 2017;28:945–72.
- Yoon HS, Sok SR. Experiences of violence, burnout and job satisfaction in Korean nurses in the emergency medical centre setting. *Int J Nurs Pract* 2016;22:596–604.
- Kamara M. Sierra Leone Government clash with health workers over COVID-19 payments. *Politico*, 2020. Available: <https://www.politicosi.com/articles/sierra-leone-government-clashes-health-workers-over-covid-19-payments> [Accessed 6 Nov 2020].
- Kash BA, May ML, Tai-Seale M. Community health worker training and certification programs in the United States: findings from a national survey. *Health Policy* 2007;80:32–42.
- Tripathy JP, Goel S, Kumar AMV. Measuring and understanding motivation among community health workers in rural health facilities in India—a mixed method study. *BMC Health Serv Res* 2016;16:366.
- Jigssa HA, Desta BF, Tilahun HA, *et al*. Factors contributing to motivation of volunteer community health workers in Ethiopia: the case of four woredas (districts) in Oromia and Tigray regions. *Hum Resour Health* 2018;16:57.
- Gatuguta A, Katusiime B, Seeley J. Should community health workers offer support healthcare services to survivors of sexual violence? A systematic review. *Bmc International Health and Human Rights* 2017;17:1–15.
- Kim K, Choi JS, Choi E, *et al*. Effects of community-based health worker interventions to improve chronic disease management and care among vulnerable populations: a systematic review. *Am J Public Health* 2016;106:E3–28.
- Fleming LC, Ansumana R, Bockarie AS, *et al*. Health-Care availability, preference, and distance for women in urban bo, Sierra Leone. *Int J Public Health* 2016;61:1079–88.
- Sumankuuro J, Crockett J, Wang S. Perceived barriers to maternal and newborn health services delivery: a qualitative study of health workers and community members in low and middle-income settings. *BMJ Open* 2018;8:e021223.
- Sanou AK, Jegede AS, Nsungwa-Sabiiti J, *et al*. Motivation of community health workers in diagnosing, treating, and referring sick young children in a multicountry study. *Clin Infect Dis* 2016;63:S270–5.
- Tulenko K, Møgedal S, Afzal MM, *et al*. Community health workers for universal health-care coverage: from fragmentation to synergy. *Bull World Health Organ* 2013;91:847–52.