

Community health worker motivation to perform systematic household contact tuberculosis investigation in a high burden metropolitan district in South Africa

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Abstract

Background

South Africa faces a chronic shortage of professional health workers. Accordingly, community health workers (CHWs) are being employed to mitigate the ongoing deficiencies. In addition to facilitating linkages between communities and primary health care (PHC) facilities, CHWs are entrusted with a range of crucial tuberculosis (TB), HIV/AIDS and maternal health services. As increased access to quality service delivery hinges upon their motivation, this study investigated CHWs' motivation to deliver systematic household contact TB investigation (SHCI).

Methods

In 2017, a cross-sectional survey was conducted among CHWs enrolled in the ward-based PHC outreach teams in the Mangaung Metropolitan District. Descriptive, exploratory factor analysis and multiple linear regression analysis were conducted to establish the dimensions, levels and determinants of CHW motivation. Statistical significance was determined at $p \leq 0.05$.

Results

Out of 235 participants, the majority were female (89.2%). Participants' median age was 39 (inter-quartile range: 33-45) years. Job satisfaction, burnout and team commitment characterised CHW motivation or lack thereof, together explaining 56.04% of the total variance, with a mean score of 51.59 (standard deviation: 5.14) out of 64. The full scale showed satisfactory internal consistency (Cronbach α : 0.734). The individual sub-scales also had acceptable internal consistency (Cronbach α —job satisfaction: 0.83; burnout: 0.83; and team commitment: 0.73). CHW category (i.e. formal – with at least phase 1 of standardised training vs. informal – with non-standardised training) and TB SHCI training and knowledge significantly influenced CHW motivation. Formal CHWs scored twice higher ($\beta = 2.020$; $p = 0.009$) than informal CHWs on the motivation scale. Motivation scores increased by 0.841 ($p = 0.007$) times with every unit increase in CHW TB SHCI knowledge. Scores were more than twice lower ($\beta = -2.289$; $p = 0.003$) among CHWs who did not attend TB SHCI training than those who did.

Conclusion

The high mean score implies that the CHWs were motivated to perform TB SHCI. The TB programme in the Free State should ensure sustained CHW motivation to effect improved access to quality TB SHCI service provision. To this end, the TB programme should pay close attention to the CHWs' formalisation, TB knowledge and training.

Background

In 2012, South Africa undertook to implement a National Health Insurance (NHI) scheme [1] as a means to achieve universal health coverage. A key health reform under the NHI is the re-engineering of primary

health care (PHC) via three streams including municipal ward-based PHC outreach teams (WBPHCOTs), integrated school health programmes and district clinical specialist teams [2, 3]. Organised under WBPHCOTs, community health workers (CHWs) constitute a critical human resource for the PHC Re-engineering strategy. The CHWs are selected from the communities where they live and are also answerable to the same communities [4, 5]. CHWs are employed to mitigate the ongoing professional health worker shortages in South Africa [2, 3]. In addition, the CHWs facilitate linkage between communities most in need and PHC facilities, thereby increasing access to basic health services and contributing to improved health [2, 3, 6–11].

In 2018, a national WBPHCOT Policy Framework was launched to guide WBPHCOT organisation, including CHW selection, training, scope of work, monitoring and evaluation, and formal integration into the health system [2]. Ideally, a WBPHCOT comprises six to ten generalist CHWs, supervised by an outreach team leader (OTL) – usually an enrolled nurse who reports to the PHC facility manager – and a data capturer [2]. In order to be selected for the WBPHCOTs, individuals should preferably have a Grade 12 qualification. In terms of training, CHWs typically receive initial short term training at recruitment to equip them with skills to provide safe and quality services, which is usually supplemented by refresher training to update their skills and reinforce the initial training [4,6,7,12,13].

The implementation of the WBPHCOT Policy in the Free State Province of South Africa is ongoing and scale-up is largely dependent on the availability of funding. For this reason, WBPHCOTs in the Free State comprise two categories of CHWs, informal CHWs – those who have not yet received standardised WBPHCOT training, and formal CHWs – those who have received at least phase 1 WBPHCOT standardised training. A critique on the WBPHCOT Policy Framework is that the all-important issues of CHW remuneration and working conditions are negated [3]. Inevitably, poor remuneration and working conditions are bound to negatively affect CHWs' performance motivation, which in turn would affect their retention and the overall sustainability of the PHC Re-engineering Strategy. Previous research has reported that both financial and non-financial incentives including, but not limited, to appreciation by communities, supportive supervision, acquisition of relevant skills, opportunity for personal growth, potential for career advancement, and feelings of altruism variably contribute towards CHW motivation [14–18]. Conversely, individual factors such as burnout, poor personal health and job insecurity, and environmental factors such as resource constraints (for example, the lack of transport, medical supplies, etc.), poor remuneration, poor communication, and paucity of supervision and support, contribute towards decreased CHW motivation [16, 17, 19, 20].

In light of the ongoing PHC Re-engineering in South Africa, this study focused on motivation of CHWs recruited into WBPHCOTs in the Mangaung Metropolitan District in the Free State Province. Particularly, the study sought to measure and identify important aspects of CHW motivation to perform TB SHCI. Evidence across Africa indicates that there are substantial numbers of undiagnosed, untreated pulmonary tuberculosis (TB) cases in communities [21–24]. Consequently, CHWs constitute a crucial component of the TB programme in South Africa; their involvement in active case finding contributes towards reduced transmission of TB in the communities [24]. CHWs conduct systematic household

contact TB investigation (SHCI) and referral of undiagnosed individuals for clinical evaluation and treatment, tracing of patients lost to follow-up, and also provide basic behavioural and treatment adherence counselling [6, 8–10]. The findings from this study are important for TB policy and programme managers in the Mangaung Metro and other areas grappling with professional health worker shortages amidst high disease burden.

Methods

Design and setting

A cross-sectional study was conducted from October to December 2017 among CHWs in the Mangaung Metropolitan District, one of five districts constituting the Free State Province. At 787 803 [25], Mangaung Metropolitan has the highest population size when compared to the other districts. At the time of data collection, the district was made up of three sub-districts, Mangaung, Thaba Nchu and Botshabelo, however, the number of sub-districts has since increased to four.

Participants

All individuals working in the WBPHCOTs were considered for this study. The participants were recruited into the study through their OTLs. The latter were responsible for arranging appointments for fieldworker-administered interviews.

Questionnaire development and data collection

Motivation is a latent variable that cannot be easily assessed [26]; questions that measure various observable aspects of this variable were collated and included into a researcher-administered questionnaire. These questions were based on existing literature on motivation among health workers, with particular focus on studies conducted in low- and middle-income country settings [20–22, 27]. CHWs' motivation to perform TB SHCI was measured using 30 questions on a Likert scale (1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree).

Fourteen questions measured CHWs' SHCI knowledge based on the national TB policy guidelines [28]. Participants were required to indicate 'true', 'false' or "don't know" in response to each question. Nine questions measured CHW TB SHCI competency based on the WBPHCOTpolicy [2] and national TB guidelines [28]. Participants had to indicate how difficult it was for them to perform certain TB SHCI tasks in households on a Likert scale of 1 to 4 (1 = not difficult at all, 2 = slightly difficult, 3 = difficult, 4 = extremely difficult). The questionnaire comprised of a further ten questions measuring socio-demographic characteristics including sex, age, education, length of service, sub-district, CHW category (with at least phase 1 of standardised training vs. informal – with non-standardised training), and TB SHCI competence, knowledge and training. The questionnaires were available in English and Sesotho, and were administered through individual interviews at the CHWs' convenience, lasting approximately 45 minutes.

Analysis

The data were double captured and verified before analysis using SPSS version 25. Responses were described using frequency counts and percentage for discrete variables, and measures of central tendency, i.e. mean and median, for continuous variables. Composite scores were computed for CHW TB SHCI knowledge and competence. Exploratory factor analysis (EFA) was used to establish the dimensions of CHW motivation [26]. Cronbach Alpha was used to examine the internal consistency of the items forming part of the derived full scale as well as the sub-scales. A composite score was also established in order to determine the levels of CHW motivation. Linear regression analysis was conducted to establish the determinants of CHW motivation. Statistical significance was determined at $p \leq 0.05$.

Results

Participant characteristics

In total, 235 CHWs participated in the study. A large majority were female (89.2%). The median age of the participants was 39 (inter-quartile range [IQR]: 33–45) years. The distribution of informal CHWs (49.4%) was similar to that of formal CHWs (50.6%). Thaba Nchu (37.9%) and Botshabelo (36.6%) sub-districts each registered more than one-third of the CHWs. In terms of formal education, just more than three-quarters (75.7%) of the participants had attained a matric/grade 12 certificate.

In line with the WBPHCOT Policy [2], most (61.3%) CHWs indicated that they were supervised by OTLs as opposed to PHC facility-based professional nurses/managers (28.1%) or non-governmental organisation (NGO)-based supervisors (9.8%). The median length of service for the CHWs was three (IQR: 1–6) years. Their mean TB SHCI competence score was 7.1 (sd: 1.9) out of 9 and their mean the TB SHCI knowledge score was 10.5 (sd: 1.1) out of 14 (Table 1).

Table 1: Participants' demographic characteristics

Variable	n (%)
Sex	24 (10.2)
Male	211 (89.8)
Female	
Age in years: (median; IQR)	39 (33–45)
CHW category	116 (49.4)
Informal	119 (50.6)
Formal	
Sub-district	60 (25.5)
Bloemfontein	89 (37.9)
Thaba Nchu	86 (36.6)
Botshabelo	
Formal education	42 (17.9)
Secondary school	178 (75.7)
Matric/Grade 12	15 (6.4)
Tertiary	
Supervisor	144 (61.3)
Outreach team leader	68 (28.9)
PHC facility-based nurse/manager	23 (9.8)
NGO-based supervisor	
Length of service in years (median; IQR)	3 (1–6)
Attended TB SHCI training in the past 12 months	164 (69.8)
Yes	71 (30.2)
No	
TB SHCI competency score (mean; sd)	7.1 (1.9)
TB SHCI knowledge score (mean; sd)	10.5 91.1

IQR = inter-quartile range; sd = standard deviation; *based on 220 participants.

Exploratory factor analysis of the motivation scale

The scale measuring motivation to perform TB SHCI was analysed using EFA with principal axis factoring, orthogonal (varimax) rotation and Eigen value greater than the Kaiser criterion of 1. The Kaiser-Meyer-Olkin measure verified sampling adequacy for the analysis ($KMO = 0.838$) and the Bartlett's test of sphericity ($\chi^2[120] = 1469.639$; $p < 0.001$) indicated that correlations between items were large enough for the EFA. Factor loadings > 0.4 were considered significant. There were three factors with Eigen values greater than the Kaiser criterion of 1. A scree plot showed inflexions that justified the retention of these three factors. Table 2 depicts the factor loadings after rotation.

Table 2: Factor analysis of CHW motivation to perform TB SHCI

Item	Factor 1: Job satisfaction	Factor 2: Burnout	Factor 3: Team commitment
I have happy thoughts and feelings about those I am able to help	0.828		
I am proud of what I can do to help others	0.695		
I believe I can make a difference in my work	0.649		
I am a hard worker	0.602		
I do things that need doing without being asked or told	0.506		
I am punctual when coming to work	0.505		
I am proud to be working for the WBPHCOT		0.741	
I feel committed to working with this ward-based outreach team		0.723	
The WBPHCOT inspires me to do my very best in my job working in the community		0.683	
I am satisfied with the services being provided by me		0.504	
My work makes me feel satisfied		0.473	
I feel overwhelmed because my workload seems endless			0.778
Sometimes when I get up in the morning I dread having to face another day at work			0.673
I feel overwhelmed by my work as a CHW			0.654
I only do this job to get paid			0.456
I feel emotionally drained at the end of every day			0.427
% variance explained	33.14	14.95	7.95
Cronbach α	0.83	0.83	0.73
Extraction method: principal axis factoring. Rotation: Oblimin with Kaiser Normalisation.			

Overall, CHW motivation to perform TB SHCI was characterised by three factors, including job satisfaction, burnout and team commitment, which together, explained 56.04% of the variance in CHW motivation. With an Eigen value of 5.30, factor 1, 'job satisfaction', comprised of six items and explained 33.1% of the variance in CHW motivation. Factor 2, 'burnout', comprised of five items, had an Eigen value

of 2.39 and explained 14.95% of the variance in CHW motivation. Factor 3, ‘team commitment’ comprised of four items, had an Eigen value of 1.27, and explained 7.95% of the variance in CHW motivation.

Reliability analysis of motivation scale

In terms of reliability, internal consistency (Cronbach Alpha [α]) was calculated for the derived motivation scale as well as the associated individual sub-scales. The 16-item scale showed satisfactory internal consistency with Cronbach α of 0.734. Each of the individual sub-scales also had acceptable internal consistency as reflected by the respective Cronbach α values; job satisfaction: 0.83; burnout: 0.83; and team commitment: 0.73.

Table 2: Factor analysis of CHW motivation to perform TB SHCI

CHW motivation level

The mean scores for the items used to measure motivation to perform TB SHCI are indicated in Table 3. The scoring was such that higher mean scores suggest higher motivation. The highest mean score was established for the item “I am a hard worker,” ($n = \text{mean: } 3.78; \text{sd: } 0.45$), implying that respondents would describe themselves as highly motivated in this respect. The lowest score was for the item “I only do this job to get paid,” (mean: 1.71; sd: 0.78), implying that some respondents felt demotivated in their current work position. The raw item scores were then summarised and the total score was divided by the total number of items measuring CHW motivation. The mean motivation score was 51.59 (sd: 5.14) out of 64 implying that overall, the CHWs were inclined to be well motivated to perform TB SHCI.

Table 3: Level of motivation among CHWs (N = 235)

Item	n (%) agreed	Mean (standard deviation) out of 4
I have happy thoughts and feelings about those I am able to help	233 (99.1)	3.72 (0.47)
I am proud of what I can do to help others	234 (99.6)	3.76 (0.44)
I believe I can make a difference in my work	231 (98.3)	3.68 (0.50)
I am a hard worker	232 (98.7)	3.78 (0.60)
I do things that need doing without being asked or told	222 (94.5)	3.52 (0.62)
I am punctual when coming to work	222 (94.5)	3.52 (0.63)
I am proud to be working for the WBPHCOT	215 (91.5)	3.44 (0.78)
I feel committed to working with this WBPHCOT	217 (92.3)	3.47 (0.71)
The WBPHCOT inspires me to do my very best in my job working in the community	220 (93.6)	3.52 (0.64)
I am satisfied with the services being provided by me	222 (94.5)	3.50 (0.67)
My work makes me feel satisfied	220 (93.6)	3.52 (0.67)
I feel overwhelmed because my workload seems endless	122 (51.9)	2.58 (0.94)
Sometimes when I get up in the morning I dread having to face another day at work	117 (49.8)	2.49 (0.97)
I feel overwhelmed by my work as a CHW	136 (57.9)	2.69 (0.95)
I only do this job to get paid	28 (11.9)	1.72 (0.78)
I feel emotionally drained at the end of every day	137 (58.3)	2.69 (0.93)
Mean motivation score was 51.59 (5.14) out of 64; N = 235		

Determinants of CHW motivation to perform TB SHCI

A multiple regression was run to predict motivation to perform TB SHCI based upon CHWs' sex, age, education, CHW category (i.e. informal vs. formal), location, length of service, attendance of most recent TB SHCI training, and TB SHCI knowledge and competence. Preliminary analyses were performed to ensure that the assumptions of linearity, independence of errors, homoscedasticity, unusual points and normality of residuals were met. The above-mentioned independent variables statistically significantly predicted CHW motivation ($F_{9,210} = 3.233$; $p < 0.001$; $R^2 = 0.122$). Out of all the independent variables, CHW category ($p = 0.009$), recent attendance of TB SHCI training ($p = 0.001$) and TB SHCI knowledge ($p = 0.001$) made a statistically significant contribution towards the prediction of motivation among the CHWs. Formal CHWs scored 2.020 times higher on the motivation scale than informal CHWs, suggesting higher levels of motivation among the former group of CHWs. Motivation scores increased by 0.841 times with every unit increase in CHW knowledge. However, CHWs who had not attended the most recent training on TB SHCI scored 2.289 times lower on the motivation score than those who had done so, indicating lower levels of motivation among the former group.

Table 4: Multiple regression model for the determinants of CHW motivation to perform TB SHCI

Predictor	Unstandardised coefficient		p-value
	B	Standard error	
Constant	37.784	6.236	< 0.001
Sex			
Male	0.503	1.107	0.657
Female			
Age	0.001	0.048	0.976
Education			
Secondary school	1.185	0.809	0.114
Matric/Grade 12	2.020	0.762	0.009
Tertiary			
CHW category			
Informal			
Formalised			
Sub-district			
Bloemfontein	0.476	0.480	0.322
Thaba Nchu			
Botshabelo			
Length of service	-0.114	0.124	0.362
Attended TB SHCI training in the past 12 months	-2.289	0.773	0.003
Yes			
No			
TB SHCI knowledge score	0.841	0.311	0.007
TB SHCI competency score	-0.184	0.188	0.328
Overall p = < 0.001; R ² = 0.122.			

Discussion

South Africa subscribes to the World Health Organization's (WHO) End TB Strategy envisioning to halt the TB epidemic by 2035 [29]. This ambitious goal necessitates commitment from TB programmes in terms of the quality of service provision. Moreover, quality service provision is largely dependent on health worker motivation [19, 21, 22, 24, 27, 30]. This study explored the motivation of CHWs in the Mangaung Metro in South Africa to perform TB SHCI. The CHWs displayed high motivation to perform SHCI, with specifically three dimensions underlying their motivation—of job satisfaction, burnout and team commitment. Results could be useful to other higher burden contexts experiencing professional health worker shortages such that some tasks within the TB programme necessarily have to be shifted to CHWs.

The findings of this study corroborate previous research reporting that CHW motivation is both intrinsic and extrinsic [14, 17, 18, 20, 31–34]. CHWs in the current study scored high suggesting high overall motivation. More specifically, the high scores were in respect of the sub-scales measuring intrinsic job satisfaction and commitment to WBPHCOTs. However, moderate levels of burnout were evident. In a study that profiled CHWs in the KwaZulu-Natal Province of South Africa, burnout was attributed to sources external to the CHWs including a lack of supportive supervision, a lack of career pathways, inadequate stipends, a lack of debriefing following interactions with families, and dangerous work environments [34]. It is therefore imperative for TB programme managers/coordinators, WBPHCOT supervisors and policy makers to proactively improve CHWs' working conditions in a bid to improve their motivation and retention. Enquiries into potential interventions deduced that multi-faceted interventions taking CHWs' workloads and their expectations into account, are likely to improve their motivation and retention in service for longer periods [35, 36].

The CHW category (i.e. formal CHWs with at least phase 1 of standardised training vs. informal with non-standardised training) was an important determinant of their motivation in this study. More specifically, formal CHWs scored almost three times higher on the motivation scale relative to informal CHWs. This finding echoes sentiments from previous reports across South Africa to formalise the status of CHWs in the health system [7, 33]. Maboko and colleagues [33] urge that formal recognition of CHWs as an essential cadre for improving healthcare delivery at community level, adequate remuneration for their work, as well as advanced training and a clear career development pathway, helps to bolster the quality of their motivation and their services.

Another variable that was positively associated with CHW motivation was their knowledge about TB SHCI. CHW motivation scores increased by 1.1 times with every unit increase in their TB SHCI knowledge. As knowledge is acquired mostly through training, the inverse relationship between attendance of the most recent training on TB SHCI and CHW motivation in this study is not surprising. CHWs who missed most the recent training on TB SHCI scored almost two-and-a half times lower on the motivation scale than those who had attended the training. This finding aligns with a previous study in the Free State Province reporting that more than half of the CHWs had not received basic training in HIV counselling and testing [37]. In a Tanzanian study [38], the provision of regular refresher training ranked second highest among recommendations to ensure motivation and retention of CHWs in the country. It is therefore imperative for the TB programme in the Free State to provide the necessary initial and regular refresher training to CHWs.

In three previous studies, one in the Eastern Cape Province [38] and two in India [18, 20], CHWs expressed an urgent need for knowledge acquisition. The CHWs particularly felt empowered through acquisition of knowledge and skills which facilitated their optimal functioning in communities [20]. Another study among CHWs in Uganda highlighted that skills and knowledge contributed to positive attitudes towards lay health work and positive intentions to remain in service [36]. However, while knowledge acquisition is crucial to the successful performance and individual level motivation of CHWs, under the PHC Re-

engineering strategy the current basic and continuing training systems remain largely fragmented and poorly organised [3].

The strength of the study is that it contributes to knowledge on the levels of and dimensions underlying CHW motivation in a high TB-burdened metropolitan district. The high levels of motivation established among CHWs in this study should be interpreted with caution due to the possibility of social desirability bias among the CHWs, whereby they might have portrayed themselves in a better light—as being better motivated—than they actually were [40]. Moreover, only CHWs available on the day of the field visit were interviewed, which could likely explain the high levels of motivation [40]. Future research should make provision to capture motivation levels of all CHWs through multiple field visits and also explore the association between CHW motivation levels and the quality of services provided as this was not investigated in the current study. Another limitation is that the CHWs were only asked about their involvement in TB SHCI and this is only one of their many activities.

Conclusion

This is the first study to explore the motivation of CHWs to perform TB SHCI in the context of PHC Re-engineering in the Free State Province. The study found high levels of motivation among CHWs to perform TB SHCI. CHW motivation was defined by the dimensions of job satisfaction, burnout and team commitment. CHW motivation was significantly associated with CHW category and TB SHCI knowledge and training. In the context of PHC re-engineering, it is important to ensure sustained CHW motivation to effect improved access to quality service provision. The TB programme should endeavour to formalise CHWs and also strengthen their TB knowledge and training regarding TB SHCI.

Abbreviations

HIV Human immunodeficiency virus

NGO Non-governmental organisation

NHI National Health Insurance

OTL Outreach team leader

PHC Primary health care

SHCI Systematic household contact investigation

TB Tuberculosis

WBPHCOT Ward-based primary health care outreach team

UHC Universal health coverage

Declarations

Ethics approval, consent to participate and permissions

Ethical clearance was obtained from the Health Sciences Ethics Research Committee (No IRB00006240) at the University of the Free State. Participation in the study was voluntary, based on informed written consent. Participants were interviewed in their preferred language – English or Sesotho. Efforts were made to minimise disruption of the daily routine of the CHWs. Confidentiality was ensured during data gathering, processing and dissemination. The Free State Department of Health authorised the research.

Consent for publication

Not applicable in this section.

Availability of data and materials

The data analysed during this study are not publicly available as individual privacy would otherwise be compromised.

Competing interests

Authors declare no competing interests.

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Author contribution

GK conceptualised the research, managed data collection, cleaning and analysis and drafted the initial manuscript. CH and ME contributed to development of the data collection instrument and provided input to improve the manuscript. All authors read and approved the final manuscript.

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