

# BMJ Open Relationship between role stressors, job tasks and job satisfaction among health surveillance assistants in Malawi: a cross-sectional study

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**To cite:** Ntopi S, Chirwa E, Maluwa A. Relationship between role stressors, job tasks and job satisfaction among health surveillance assistants in Malawi: a cross-sectional study. *BMJ Open* 2020;**10**:e037000. doi:10.1136/bmjopen-2020-037000

► Prepublication history for this paper is available online. To view these files, please visit the journal online (<http://dx.doi.org/10.1136/bmjopen-2020-037000>).

Received 19 January 2020  
Revised 12 September 2020  
Accepted 15 October 2020



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## ABSTRACT

**Objectives** The objective of this study was to investigate the role stressors, sociodemographic characteristics and job tasks of health surveillance assistants (HSAs) and to explore major predictors of role stressors and job satisfaction of HSAs in Malawi.

**Setting** Data were collected from health centres and hospitals of three Malawi districts of Mangochi, Lilongwe and Mzimba.

**Participants** Respondents were 430 HSAs. 50.20% of them were male, while 49.8% were female.

**Design** A cross-sectional study of the observational correlational design was carried out.

**Main outcome measures** Respondents perceptions of job tasks, role stressors and job satisfaction.

**Results** The key findings of this study were role ambiguity and role overload were significantly negatively related to job satisfaction, while role conflict was insignificantly related to job satisfaction. Additionally, the clinical tasks of the HSAs and some of the sociodemographic variables were associated with the role stressors and job satisfaction of the HSAs in Malawi.

**Conclusions** Since the HSAs clinical tasks were significantly related to all role stressors, there is need by the government of Malawi to design strategies to control the role stressors to ensure increased job performance and job satisfaction among HSAs. Furthermore, studies may be required in the future to assist government to control role stressors among HSAs in Malawi.

## INTRODUCTION

In Malawi, there is a critical shortage of health workers where the doctor/patient ratio is as low as three doctors per 100 000 people, lower than the WHO's prescribed norm of one doctor for 1000 people. Additionally, there has been a growing demand for healthcare in Malawi especially with the advent of the HIV/AIDS pandemic.<sup>1</sup> To meet this high demand for healthcare, task shifting has been advocated where some of the roles of medical doctors have been delegated to junior cadres such as clinical officers and health surveillance assistants (HSAs). Task shifting is the delegation of tasks to people

## Strengths and limitations of this study

- We used adequate statistical analysis to relate role stressors and job satisfaction in health surveillance assistants (HSAs).
- We adapted instruments that have commonly been used and have high reliability in studies related to role stressors and job satisfaction.
- The study is limited in that it only considers data from HSAs working in government under government pay roll being studied.
- Additionally, the study is limited in terms of literature, because it is the first of its kind to be conducted among HSAs.
- The study being a cross-sectional study did not elicit much information about the role stressors in HSAs.

who are in lower positions.<sup>2,3</sup> Its implementation is wholly supported by the WHO, which recommends each country introducing task shifting through community health workers (CHWs) should have a national framework to guide the roles and training of CHWs.<sup>3</sup>

The HSA cadre has its routes from the Alma Ata Declaration in Russia in 1978.<sup>4</sup> The meeting was a high-level global meeting organised by the WHO and UNICEF.<sup>5</sup> The meeting was attended by official government representatives from all over the world and UNICEF member countries. At the meeting, the role of the CHW was well defined.<sup>5</sup> Formerly, they were known as smallpox vaccinators or cholera assistants and were renamed HSAs immediately after the Alma Ata Declaration.<sup>6</sup> HSAs are a group of one of the community-based health workers in Malawi. Historically, the role of the HSAs focused mainly on the delivery of preventive health services such as hygiene and sanitation promotion, immunisation, and health education.<sup>6</sup> Since then, the HSAs' role has expanded to include roles such as community-based maternal and newborn

care, child health, nutrition and family planning, all of which are delivered under the essential health package programme.<sup>7</sup>

With this expanded role, there is a general feeling among HSAs and other health workers that the HSAs are overloaded with work.<sup>8,9</sup> In terms of role ambiguity, issues such as the absence of standardised procedures for their selection and training have been featured including lack of job descriptions and work protocols for their use at work.<sup>10</sup> Regarding role overload, HSAs have the feeling that they are doing too much and that they are overloaded with work.<sup>11</sup> In terms of role conflict, the HSAs' role overlaps with the roles of other cadres such as nurses, clinical officers and assistant environmental health officers (AEHOs). Additionally, their supervision is complex as it involves many supervisors from both clinical and the preventive section; and in the course of this, role conflict arises due to competing priorities.<sup>11</sup> All this has the likelihood to contribute towards high role overload, lower work performance and lower job satisfaction.<sup>12</sup>

Role stressors in the literature often times have referred to the terms such as role conflict, role ambiguity and role overload.<sup>13</sup> Role conflict among HSAs could refer to conflicting situations that may arise at the workplace and may affect their compliance.<sup>14</sup> An example of this could be a conflicting situation that may arise between the HSAs and their supervisors or coworkers at the workplace. A very likely example of this is a situation where an HSA reports to two supervisors; one supervisor may need the HSA while the HSA is busy with the other supervisor. Situations like this are likely to cause role conflict at the workplace. Role ambiguity is defined as when employees lack some clarity on their roles.<sup>14</sup> A good example of this could be the introduction of a new role without proper orientation or guidelines for the workers. Role overload is defined as when employees have too many roles or tasks to perform.<sup>14</sup> This is likely to happen when employees do not have adequate time for them to perform other roles such as those related to work or family because they have too many roles.

Generally, information about the CHWs' role ambiguity, role conflict, role overload and job satisfaction are scanty in the literature. Studies have been conducted elsewhere in the developed or developing countries in Asia<sup>15,16</sup> on other professions such as nurses, accounting personnel and teachers. The studies conducted measured role stressors such as role ambiguity, role conflict and role overload and have suggested that if these role stressors remain uncontrolled, they will affect the job performance and the job satisfaction of employees in an organisation.<sup>17</sup> This current study was specifically aimed to explore: (1) perceptions of HSAs on role stressors and job satisfaction, (2) the effect of job tasks and sociodemographic characteristics on the role stressors and job satisfaction and (3) identify the main predictors of role stressors and job satisfaction.

## THEORETICAL FRAMEWORK

The Role Episode Model (REM) by Katz and Kahn<sup>18</sup> was integrated with the job satisfaction theories to further explore role conflict, role ambiguity, role overload and job satisfaction of HSAs. The model suggests factors such as organisational (ie, formal power structure, level in the organisation, role requirements, task characteristics, physical setting and organisational practices) and personal and interpersonal factors (ie, individual's status, needs, values, education, ability, age, sex or gender and tenure) affect the communication process in the REM. The model was used to identify predictors associated with role stressors and job satisfaction in the management of stress.

Role theory states that when the behaviours expected of an individual are inconsistent, there is likely to be role conflict that may lead to stress and eventually get the employee dissatisfied with the job and have lower work performance.<sup>19,20</sup> Additionally, the theory states that the absence of information such as work guidelines can contribute to role ambiguity and job dissatisfaction as the employee tries to develop coping mechanisms and a defensive mechanism to avoid stress.<sup>21</sup> In line with what has been stipulated previously, this study suggests HSAs occupy a role, and this role is accompanied by expected and perceived behaviours and actions that are applicable to the successful performance of their role.<sup>22</sup>

Herzberg's motivator-hygiene theory of job satisfaction was also applied in the study. Factors such as achievement, recognition, advancement, compensation, authority, responsibility and the job itself were considered as motivational factors (intrinsic job satisfaction), while organisation policies and practices, supervision, relationship with coworkers, job security, social status and work conditions were considered as hygiene factors (extrinsic satisfaction).<sup>23</sup> In line with this view, it was our assumption that HSAs are satisfied with motivational factors and are dissatisfied with hygiene factors.

## METHOD

### Study design and sample

Between January 2017 and December 2017, a cross-sectional survey was conducted to investigate the relationship between role stressors, job tasks and job satisfaction among HSAs in Malawi. Data were collected from HSAs working in three districts of Mangochi, Lilongwe and Mzimba South, which represented the southern, central and northern regions of Malawi, respectively. Lilongwe district had both urban and rural representation. The urban setting was selected for comparison if there were any differences in the role stressors and job satisfaction between the rural HSAs and the urban HSAs.

All HSAs working in the three selected districts under the government of Malawi payroll and working in either Christian Hospitals Association of Malawi (CHAM) or Ministry of Health facilities and had work experience of 2 or more years were eligible to participate in the study.

Overall, the population of HSAs in the three districts was 1924 and 9 did not meet the inclusion criteria. The sample size for the study was 385 HSAs and was calculated based on Lemeshow *et al*<sup>24</sup> sample size calculation formula for a cross-sectional study. Since studies to explore role stressors and job satisfaction of HSAs had not been conducted in Malawi, it was assumed that 50% of the HSAs were affected by the phenomena. Twenty per cent was factored in considering the rate of the non-responses. A total number of 462 questionnaires were distributed, and the response rate was 93.5%. Multistage sampling was done at national level to select districts and at district level to select health facilities. This was done to ensure there was no bias and the study results were representative.

Prior to the data collection, the questionnaire was reviewed by experts in the field and some HSAs to ensure it had the right content. A pilot test was conducted in Nkhotakota, a district different from the sampled districts among 36 HSAs (data not included in the final analysis). The district health officers were asked for permission to distribute the questionnaire within their health facilities (health centres and hospitals). Health facilities with high number of HSAs population were selected using probability proportional to size sampling. The research assistants gave an explanation of the research that all the information provided would be used anonymously. Participation was voluntary, considering that neither patients nor patients' data were involved in the study. Additionally, participants were asked to sign a consent form before responding to the questionnaire. The study used a descriptive cross-sectional study design, and this decision was based on the fact that it was appropriate for exploring the relationships that exist between the HSAs tasks, role stressors and job satisfaction at a single given point in time.<sup>25</sup>

### Patient and public involvement statement

Patients and public were not involved in the development, design, recruitment and sampling of this study.

### Measures

A standardised face-to-face self-administered questionnaire having five sections was used to measure study variables. The first section collected sociodemographic data with the intention to identify if there were some confounding variables that play a role in the relationship between role stressors and job satisfaction. Subsequent sections collected data on HSAs' job tasks (as taken from the HSAs' job description), role conflict and role ambiguity, role overload and job satisfaction using adapted instruments. To adapt some items for the questionnaires, permission was sought from the American Psychological Association and the University of Minnesota Vocational Psychology Research through the RightsLink of the Copyright Clearance Centre.

A profile of HSAs was created from the data, and the sociodemographic information such as age, sex, level

of education and years at service post was reported. Descriptive statistics such as mean, corresponding SD and percentages formed some of the summary statistics.

Role conflict and ambiguity was measured by role conflict and ambiguity (RCA) scale developed by Rizzo *et al*.<sup>26</sup> The scale in total had 14 items: six items for role ambiguity and eight items for role conflict. The scale was a 5-point Likert-type response format (from 1='strongly disagree' and 5='strongly agree'). The RCA scale was chosen because it has been widely used in literature and is the most dominant tool used in role conflict and role ambiguity studies.<sup>27 28</sup> Role conflict scores for the sample were calculated to get a mean with its SD and range. The possible range of role conflict scores with the tool used was 1.00–5.00. A higher number denoted a higher rate of role conflict. Similarly, role ambiguity scores were calculated to get a mean with its SD and range. The possible range of role ambiguity scores using the tool was 1.00–5.00.

Role overload was measured by the use of the Role Overload Scale (ROS) developed by Reilly.<sup>29</sup> The ROS is a 13-item questionnaire ('there are too many demands on my time') with a 5-point Likert-type response format (from 1='strongly disagree' and 5='strongly agree'). The tool had a Cronbach's alpha of 0.88. Other researchers had found the Cronbach's alpha ranging from 0.89 to 0.94.<sup>30–32</sup> Role overload scores for the sample were calculated to get a mean with its SD and range. The possible range of role overload scores with the scale used was 1.00–5.00, with the higher score denoting a higher rate of role overload, and the possible range of role overload scores using the scale was 1.00–5.00.

The Minnesota Satisfaction Questionnaire (MSQ) of the shorter version, the MSQ20, was used to collect data on job satisfaction. The tool had been widely used in both developed and developing countries.<sup>33</sup> It is a 20-item questionnaire with a 5-point Likert-type response format (from 1=very dissatisfied to 5=very satisfied). The instrument is also reported to have high Cronbach's alpha ranging between 0.70 and 0.80.<sup>34</sup>

Job satisfaction scores for the sample were calculated to get a mean with its SD and range. The possible range of job satisfaction scores with the scale used was 1.00–5.00, with the higher score denoting a higher rate of job satisfaction. The possible range of job satisfaction scores using the scale was 1.00–5.00.

The task inventory scale developed by Burgel *et al*<sup>35</sup> was adapted in this study to collect information on HSAs' job tasks. The instrument has been used in previous studies by Mbambo *et al*<sup>36</sup> and Uys *et al*<sup>37</sup> in studies related to job analysis of selected health workers in a district health system in KwaZulu-Natal for the South African Primary Health Care (PHC) package of services. The instrument was modified, and tasks not relevant to this study were removed and replaced with HSAs' tasks contained in their job description to develop a final instrument. For each task, two options were required: to tick in the most appropriate box whether the task applied to the setting and the frequency with which the task was carried out

(less than once per week, 1–5 times per week, 6–10 times per week and more than 10 times per week). In addition, the questionnaire had a demographic section where all information pertaining to demographic variables were collected.

The data collection tools were first pretested before distribution to respondents. The pretest was done among HSAs in Nkhosakota, a different district from the sampled districts. The pretest was conducted with the intention to identify items in the questionnaire that were not clearly drafted and might not be clear in the reader's view. The identified items were corrected and once the corrections were made, the questionnaire was ready for distribution to the respondents. The pretest findings were not incorporated into the main study.

Internal consistency was used to assess the reliability of the scales and subscales. This was carried out to find out if there was consistency in the way the respondents responded to the items on the questionnaire. Cronbach's alpha ( $\alpha$ ) was used for this purpose. The RCA, the ROS and the MSQ scales had all a Cronbach's alpha of  $\geq 0.70$ . Originally, the authors had high Cronbach's alpha ranging from 0.80 to 0.90, but this was deemed acceptable since the instruments were adapted with some minor modifications and translated into the vernacular language (Chichewa), which is commonly spoken in most districts in Malawi. The Cronbach's alpha for the Task Inventory Scale was 0.60. An alpha value of  $\geq 0.70$  is desirable, although values that are slightly below 0.70 are usually considered acceptable.<sup>38</sup>

Content validity was used to ensure that the instrument captured relevant information and it measured role stressors and job satisfaction in all HSAs in a similar manner to avoid bias.<sup>39</sup> Experts in the field were given the questionnaire to look at the items to determine whether the items in the scale accurately reflected the constructs of role stressors and job satisfaction and the HSAs' tasks. Additionally, validity was achieved by bias control through multistage sampling that ensured all the three regions of the country, districts, health facilities and the HSAs in the sampled districts had an equal chance of representation. Furthermore, the researcher ensured that all questionnaire items were based on the objectives of the study.<sup>40</sup>

Permission to use the instruments was sought from the owners before use. The questionnaire was translated into the vernacular language (Chichewa) and back translated into English for consistency of meaning. The translation process for the questionnaire from English to the vernacular language (Chichewa) followed a method as illustrated by WHO<sup>41</sup> and involved both forward and back translation to ensure there was the consistency of meaning.

The data analysis involved the use of statistics such as mean scores, SD,  $\chi^2$ , principal component analysis (PCA) and multiple regression. More details on their use have been provided in the subsequent subsections of this study.

To ascertain if there was a relationship between role conflict or role ambiguity and job satisfaction, a Pearson product-moment coefficient  $r$  was used. The possible range of correlation coefficients is  $-1$  and  $+1$ . A coefficient of  $+1$  indicated that the two variables were positively correlated, while a coefficient of  $-1$  indicated a negative relationship between the study variables.

Similarly, a Pearson product-moment coefficient  $r$  was used to ascertain if there was a relationship between role overload and job satisfaction. The possible range of correlation coefficients is  $-1$  and  $+1$ . A coefficient of  $+1$  indicated that the two variables were positively correlated while a coefficient of  $-1$  indicated a negative relationship between the study variables.

The PCA analysis was conducted using SPSS Statistics V.23 with principal axis factoring to examine the psychometric properties of the measures. The approach employed maximum likelihood extraction and varimax rotation with Kaiser normalisation to ascertain the dimensions underlying the research construct. The Kaiser rule and scree test were used to measure sampling adequacy, and the decision was based on the Kaiser-Meyer-Olkin (KMO)  $> 0.60$ , which is recommended in social sciences.<sup>42</sup> The criterion for retaining factors was an eigenvalue  $> 1$ . Items were considered to contribute sufficiently to a factor when their loading was 0.70.<sup>43</sup> The Bartlett's test was conducted to ensure it had a statistically significant probability of ( $p \leq 0.001$ ). Subsequent rotation was used to show interrelationships between factors. The Pearson's product-moment correlation was used to assess the main items of the dependent variables and to assess relationships between the dependent variables. Appended in table 1 is the KMO and Bartlett's test results.

## RESULTS

A total of 432 responses were received. Data from two participants was incomplete and was discarded; therefore, the study sample consisted of 430 HSAs, which is high and can be regarded as acceptable. According to the socio-demographic characteristics of the study participants, 50.2% were male, while 49.8% were female (table 2). The data were approximately normally distributed by an

**Table 1** Indicating variables and their KMO and Bartlett's test results

Variable	KMO	Bartlett's test		
		$\chi^2$	df	P value
Role ambiguity	0.755	1380.10	28	$P < 0.001$
Role conflict	0.647	515.11	21	$P < 0.001$
Role overload	0.776	967.19	36	$P < 0.001$
Job satisfaction	0.743	2147.41	190	$P < 0.001$

KMO, Kaiser-Meyer-Olkin.

**Table 2** Frequency and relationships between sociodemographic variables and the dependent variables

Variable	N	%	Role ambiguity			Role conflict			Role overload			Job satisfaction		
			M	$\chi^2$	P value	M	$\chi^2$	P value	M	$\chi^2$	P value	M	$\chi^2$	P value
Age (years)				<b>78.20</b>	0.001	<b>87.15</b>	<b>0.001</b>	<b>129.35</b>	0.001	<b>75.55</b>	<b>319.31</b>	0.000		
26–35	154	35.8	13.86		24.30		28.56		74.87					
36–45	221	51.4	13.87		23.83		29.00		76.19					
46–55	52	12.1	15.52		22.32		26.40		75.31					
56–60	3	0.70	11.33		22.00		31.00		67.00					
Gender				<b>51.52</b>	0.016	<b>50.17</b>	<b>0.004</b>	<b>48.02</b>	0.128	<b>75.54</b>	<b>84.41</b>	<b>0.031</b>		
Male	216	50.2	13.84		23.41		28.5		75.70					
Female	214	49.8	14.25		24.20		28.59		75.39					
Marital status				<b>105.30</b>	<b>0.242</b>	<b>67.19</b>	<b>0.864</b>	<b>28.51</b>		<b>75.52</b>	<b>205.87</b>	0.151		
Married	365	85.10	13.90		23.86		28.69		75.62					
Unmarried	53	12.40	15.15		23.47		26.94		75.21					
Divorced	8	1.90	14.00		23.87		32.37		74.00					
Widowed	3	0.70	11.67		23.67		23.67		73.33					
Education				<b>116.79</b>	0.073	<b>124.78</b>	<b>0.001</b>	<b>187.36</b>	0.000	<b>75.55</b>	<b>248.71</b>	0.001		
PSLCE	8	1.90	14.25		24.88		29.75		73.62					
JCE	193	44.90	14.38		23.62		27.4		75.83					
MSCE	217	50.70	13.98		23.99		29.28		75.52					
Diploma	12	2.80	9.83		22.75		32.75		72.75					
Clinical roles				<b>52.59</b>	0.012	<b>53.27</b>	<b>0.002</b>	<b>82.32</b>	0.001	<b>75.56</b>	<b>105.63</b>	0.000		
Yes	350	81.60	14.23		23.87		28.76		75.75					
No	79	18.40	13.23		23.50		27.54		74.75					
Location				<b>105.63</b>	0.001	<b>76.75</b>	<b>0.001</b>	<b>82.97</b>	0.001	<b>75.55</b>	<b>191.50</b>	0.000		
Rural	330	76.70	14.14		23.54		28.77		76.22					
Urban	100	23.3	13.67		24.84		27.63		72.92					
District of work				<b>71.39</b>	0.246	<b>29.92</b>	<b>0.997</b>	<b>64.73</b>	<b>0.82</b>	<b>75.55</b>	<b>110.62</b>	0.799		
Mangochi	95	22.10	14.74		23.98		28.28		75.91					
Lilongwe	278	64.70	13.86		23.69		28.18		75.19					
Mzimba	57	13.30	13.81		24.07		30.70		76.68					
Years at service post				<b>52.91</b>	0.011	<b>48.83</b>	<b>0.000</b>	<b>47.49</b>	0.139	<b>14.04</b>	<b>156.19</b>	<b>0.027</b>		
<10	300	80.60	14.5		23.18		27.5		74.90					
11–19	63	16.90	13.73		24.42		28.69		13.78					

Continued

Table 2 Continued

Variable	N	%	Role ambiguity			Role conflict			Role overload			Job satisfaction		
			M	$\chi^2$	P value	M	$\chi^2$	P value	M	$\chi^2$	P value	M	$\chi^2$	P value
≥20	9	2.40	14.10			22.75			28.04			14.38		
Intention to quit			<b>14.07</b>	<b>16.13</b>	<b>0.991</b>	<b>23.78</b>	<b>57.04</b>	<b>0.001</b>	<b>28.55</b>	<b>32.61</b>	<b>0.72</b>	<b>75.54</b>	<b>122.17</b>	<b>0.000</b>
Yes	<b>9</b>	<b>2.10</b>	<b>12.00</b>			<b>21.44</b>			<b>31.11</b>			<b>72.44</b>		
No	<b>422</b>	<b>97.9</b>	<b>14.11</b>			<b>23.83</b>			<b>28.50</b>			<b>75.61</b>		

The bolded values are the Chi-square, Mean or P Value for the dependent variables and represent overall values for Age and Gender.

JCE, Junior Certificate of Education; M, Mean; MSCE, Malawi School Certificate of Education; MSCE, Malawi School Certificate of Education; PSLCE, Primary School Leaving Certificate of Education; X<sub>2</sub>, Chisquare

eyeball test used in determining the normality of data. The Q-Q ('Q' stands for quantile) plot results indicated all the data points had a linear tendency and lying on the diagonal.<sup>44</sup> All the requirements for multicollinearity were met for me to conduct multiple linear regression analysis. This was achieved through collinearity statistics, which indicated no multicollinearity issue as all variables had tolerance above 0.84.

### Relationships between sociodemographic variables and the role stressors and job satisfaction

From table 2, highly significant relationships were observed between sociodemographic characteristics of the participants and the role stressors and job satisfaction. Age was significantly related to role ambiguity, role conflict, role overload and job satisfaction. Gender was significantly related to role ambiguity, role conflict and job satisfaction. However, insignificant associations were observed between gender and role overload.

Marital status was significantly related to role overload, and insignificant relationships were found with role ambiguity, role conflict and job satisfaction. Additionally, this study findings indicate that role overload was high among divorced women. Level of education was significantly related to role conflict, role overload and job satisfaction. Findings for role ambiguity and education level were however not significant. This means that education level was related to role conflict, role overload and job satisfaction. Moderately high role conflict levels were observed among the respondents with a primary school leaving certificate of education, role overload among participants with a diploma and job satisfaction among participants with a Junior Certificate of Education. The addition of new roles was significantly related to all the role stressors and job satisfaction.

Intention to quit is a reactionary measure that occur among employees that are stressed and dissatisfied in their work. Some employees when stressed usually resort to quitting their jobs. In this study, only two HSAs had the intention to quit, and statistically significant results were obtained with role conflict, while insignificant results were obtained with role ambiguity and role overload.

HSAs' work location either at a rural or urban area had some significant findings in this study. The HSAs working at either rural or urban areas are all similar in terms of training and nature of activities. Highly significant findings were found between working at either rural area or urban areas and the role stressors and job satisfaction (table 2). This study findings indicate that respondents in health facilities based in rural areas had high role ambiguity, role overload and job satisfaction compared with those in the cities (table 2). However, respondents in health facilities based in the urban area had high perception of role conflict compared with those in the rural area.

Furthermore, significant relationships were observed between years at service post with role ambiguity, role conflict and job satisfaction. This means that years at service post were related to role ambiguity, role

**Table 3** The means and SD of the dependent variables

	Mean	SD	Observed range	Gold standard range
RA	1.76	0.74	0.86–4.88	1.00–5.00
RC	3.40	0.89	1.29–5.00	1.00–5.00
RO	3.18	0.94	1.00–5.00	1.00–5.00
JS	3.80	0.47	1.60–4.75	1.00–5.00

JS, job satisfaction; RA, role ambiguity; RC, role conflict; RO, role overload.

conflict and job satisfaction. HSAs who had served for a period range of 11–19 years had slightly high role conflict, while those with fewer than 10 years at work had slightly high role ambiguity compared with those in the other age ranges. However, satisfaction was high in those who had served for a period greater than 20 years (table 2).

### Role stressors and job satisfaction levels in HSAs

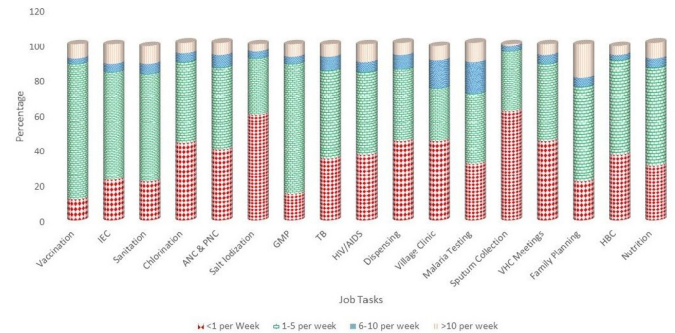
From table 3, the overall role ambiguity mean score was 1.76 (SD=0.76) indicating that the HSAs had little role ambiguity. The overall role conflict mean score resulted in a mean score of 3.40 (SD=0.89) indicating that the HSAs had mild levels of role conflict. The overall role overload mean score was 3.18 (SD=0.94) indicating that the HSAs had moderate levels of role overload. The minimum and maximum range for the role stressors' mean scores had a range of 1.00–5.00. The overall job satisfaction mean score was 3.80 (SD=0.47) indicating that the HSAs had high job satisfaction level. The HSAs in this study were highly satisfied with their job.

### Task frequency

In this study, vaccination and growth monitoring came out clearly as frequently carried out tasks by the respondents. Tasks that were rarely performed were salt testing for iodine and sputum collection and examination (see figure 1).

### Correlations between HSA tasks and the dependent variables

From table 4, out of the 17 HSAs tasks, nine had significant relationships with the role stressors and job satisfaction, while four had insignificant relationships and for three tasks (sanitation promotion, IEC and vaccination) their correlation failed to complete due to the presence of constants as all the respondents had similar responses with nothing to correlate. The tasks that were negatively significantly related to role ambiguity were antenatal care (ANC) and postnatal care (PNC) visits, family planning, drug dispensing and nutrition. The tasks that were positively correlated with role ambiguity were salt testing for iodine and growth monitoring promotion (GMP). In terms of role conflict, salt testing was negatively correlated with role conflict. Tasks that were positively significantly related to role conflict were GMP and home-based care, drug dispensing, HIV testing service (HTS), malaria rapid diagnosis testing and nutrition. Tasks that were



**Figure 1** HSAs' tasks frequencies. Data are the percentage indicating the frequency of HSAs' job tasks. For clarity <1 per week indicates rarely performed tasks when mentioned by 50% or more of the respondents, <1 per week when mentioned by 80% or more means very rarely performed, tasks performed 1–5 times per week are frequently conducted when mentioned by 70% of the respondents, tasks performed 6–10 times per week and more than 10 times per week are very frequently conducted when mentioned by over 70% of the respondents. ANC, antenatal care; GMP, growth monitoring promotion; HBC, home-based care; HSAs, health surveillance assistants; PNC, postnatal care; VHC, village health committee; IEC, information, education and communication, .

positively correlated with role overload were GMP, village health committee (VHC) meetings and HTS while those that were significantly positively related to job satisfaction were sputum collection and examination, VHC meetings and family planning.

### Relationships between the role stressors and job satisfaction

As shown in table 5, there was a significant negative relationship between role ambiguity and job satisfaction. This means that there was an association between role ambiguity and job satisfaction. There was a weak, negative and non-significant association between role conflict and job satisfaction. This means that there was no association between role conflict and job satisfaction in HSAs. In addition, there was a weak, negative and significant association between role overload and job satisfaction. This means that there was a negative association between role overload and job satisfaction in HSAs.

### Identification of factors for role stressors and job satisfaction through PCA

#### Role ambiguity

From table 6, three factors contributing to role ambiguity were extracted. The first factor explained 45.26% of the total variance, while all the three components explained 73.63% of the total variance. The extraction was done with a loading factor value of 0.70 where component 1 loaded on three items that reflected on the 'supervisor' with an eigenvalue of 3.62, component 2 loaded on three items that reflected on 'role clarity' with an eigenvalue of 1.27 and component 3 loaded on one item that reflected on 'work guidelines' with an eigenvalue of 1.00.

**Table 4** Correlations between HSA tasks and the dependent variables

		Role ambiguity	Role conflict	Role overload	Job satisfaction
Water chlorination	<i>r</i>	0.006	-0.022	0.040	-0.029
	Sig. (one tailed)	0.453	0.324	0.203	0.278
ANC and PNC	<i>r</i>	-0.107*	0.065	0.079	0.046
	Sig. (one tailed)	0.016	0.096	0.056	0.180
Salt testing	<i>r</i>	0.110*	-0.137†	-0.075	-0.068
	Sig. (one tailed)	0.012	0.003	0.064	0.082
GMP	<i>r</i>	0.185†	0.159†	0.137†	-0.071
	Sig. (one tailed)	0.000	0.001	0.002	0.072
TB	<i>r</i>	-0.045	-0.030	0.009	-0.079
	Sig. (one tailed)	0.182	0.272	0.431	0.057
HTS	<i>r</i>	-0.030	0.111*	0.088*	0.033
	Sig. (one tailed)	0.273	0.012	0.036	0.254
Drug custodian	<i>r</i>	-0.123†	0.109*	0.046	0.076
	Sig. (one tailed)	0.006	0.013	0.174	0.061
iCCM	<i>r</i>	0.000	0.070	0.073	-0.043
	Sig. (one tailed)	0.497	0.077	0.071	0.195
MRDT	<i>r</i>	-0.009	0.096*	0.031	-0.038
	Sig. (one tailed)	0.425	0.026	0.268	0.222
Sputum examination	<i>r</i>	-0.037	0.079	0.066	-0.131†
	Sig. (one tailed)	0.232	0.056	0.092	0.004
VHC meetings	<i>r</i>	0.040	-0.017	0.136†	-0.103*
	Sig. (one tailed)	0.206	0.367	0.003	0.017
FP	<i>r</i>	-0.091*	-0.078	-0.068	-0.105*
	Sig. (one tailed)	0.034	0.059	0.088	0.018
HBC	<i>r</i>	-0.068	0.141†	0.006	-0.035
	Sig. (one tailed)	0.087	0.002	0.456	0.240
Nutrition	<i>r</i>	-0.120†	0.086*	0.068	0.036
	Sig. (one tailed)	0.007	0.041	0.083	0.231

\*Correlation is significant at the 0.05 level.

†Correlation is significant at the 0.01 level.

ANC, antenatal care; FP, Family Planning; GMP, growth monitoring promotion; HBC, home-based care; HSA, health surveillance assistant; HTS, HIV testing service; ICCM, Intergrated Community Case Management; MRDT, malaria rapid diagnosis testing; PNC, postnatal care; VHC, village health committee.

### Role conflict

From [table 6](#), two factors contributing to role conflict were extracted after conducting the PCA analysis. The first factor explained 33.19% of the total variance, while all the two factors combined explained 54.64% of the total variance. The extraction was carried out with a factor loading value of 0.70 and loaded three items on component 1 with an eigenvalue of 2.32 that reflected on 'incompatibility' and two items on component 2 with an eigenvalue of 1.50 that reflected on 'time and person values'.

### Role overload

From [table 6](#), three factors contributing to role overload were extracted after conducting the PCA. The first factor explained 45.26% of the total variance, while all the three

factors when combined explained 63.04% of the total variance. In this analysis, component 1 loaded two items, component 2 loaded two items and component 3 loaded one item. Component 1 items reflected on issues of 'time pressure' with an eigenvalue of 3.37, while component 2 reflected on the issue of 'task overload' with an eigenvalue of 1.20 and component 3 reflected on issues of 'work prioritisation' with an eigenvalue of 1.11.

### Job satisfaction

From [table 6](#), six factors contributing to job satisfaction were extracted after conducting the PCA. The first factor explained 23.31% of the total variance, while all the six factors explained 58.84% of the total variance. The six



**Table 5** Relationships between the role stressors and job satisfaction

		RA	RC	RO	JS
RA	<i>R</i>	1			
	P value				
RC	<i>r</i>	-0.247*	1		
	P value	0.01			
RO	<i>r</i>	-0.097†	-0.307*	1	
	P value	0.022	0.01		
JS	<i>r</i>	-0.238*	-0.004	-0.159*	1
	P value	0.01	0.472	0.01	

\*Correlation is significant at the 0.01 level (one tailed).

†Correlation is significant at the 0.05 level (one tailed).

JS, job satisfaction; RA, role ambiguity; RC, role conflict; RO, role overload.

factors were advancement, work conditions, supervision, ability utilisation, social service and activity.

### Multiple linear regression analysis with role stressors and job satisfaction among HSAs (n=430)

Multiple linear regression results have indicated that some sociodemographic variables, job tasks and factors identified in PCA were identified as predictors of role stressors and job satisfaction. In terms of role ambiguity, model 1 demonstrated that no variable was significantly correlated

**Table 6** Summarised results indicating factors for role stressors identified during PCA

Variable	EV	% of var	Cum. tot.
<b>Role ambiguity</b>			
Supervisor	3.62	45.26	30.3
Role clarity	1.27	15.84	60.05
Guidelines	1	12.53	73.63
<b>Role conflict</b>			
Incompatibility	2.32	33.19	32.78
Time and personal values	1.5	54.64	54.64
<b>Role overload</b>			
Time pressure	3.37	45.26	26.03
Task overload	1.2	21.36	47.39
Prioritisation	1.11	15.65	63.04
<b>Job satisfaction</b>			
Advancement	4.66	23.31	12.39
Work conditions	1.88	9.41	24.59
Supervision	1.64	8.20	34.97
Ability utilisation	1.42	7.10	43.43
Social service	1.09	5.43	51.43
Activity	1.08	5.39	58.84

Cum. tot., cumulative total; EV, eigenvalue; % of var, percentage of variance.

to role ambiguity. Model 2 place of work (either at a district hospital or health centre) was significantly correlated to role ambiguity. Model 3, place of work and the job tasks of salt iodisation and GMP were significantly correlated to role ambiguity. In the full model, model 4, job tasks such as ANC/PNC visits and GMP and all the factors identified from PCA (supervisor, role clarity and guidelines) were significantly correlated to role ambiguity (table 7).

In terms of role conflict, model 1 demonstrated no single variable was significantly correlated to role conflict. Model 2 demonstrated that age and place of work were significantly correlated to role conflict. In model 3, age, education level, place of work and some job tasks for HSAs such as salt iodisation, GMP and VHCs were significantly correlated to role conflict. Overall, model 4 demonstrated years at service post, salt iodisation task and all the factors identified from PCA (intrasender role conflict and intrarole and person role conflict) were significantly correlated to role conflict (table 8).

In terms of role overload, in model 1, education level was significantly correlated to role overload. In model 2, no variable was significantly correlated to role overload. In model 3, the ANC/PNC task was significantly correlated to role overload. Overall, in model 4, the clinical role, the ANC/PNC visits task and the identified PCA factors (time pressure, task overload and work prioritisation) were significantly correlated to role overload (table 9).

In terms of job satisfaction, Model 1, none of the variables were significantly correlated to job satisfaction. In model 2, location (either rural or urban) and years at service post were significantly correlated to job satisfaction. In model 3, location, years at service post, and the job tasks of salt iodisation, HTS and family planning were significantly correlated to job satisfaction, and overall, in model 4, place of work, location, years at service post and all the factors identified from PCA (advancement and recognition, work conditions and organisation policies, supervision, ability utilisation, social service and activity) were significantly correlated to job satisfaction (table 10).

## DISCUSSION

To our knowledge, this study was the first to explore role stressors and job satisfaction of HSAs in Malawi and to determine the role of the sociodemographic and work-related variables on the relationship between the role stressors and job satisfaction. This study has contributed to the body of knowledge by providing empirical evidence to decision makers in Malawi and other countries facing similar challenges of workforce shortages and need to learn about the role stressors and job satisfaction among CHWs.

### Relationships between the role stressors and job satisfaction

This study has revealed significant findings between role ambiguity and role overload and job satisfaction. Role ambiguity was negatively significantly related with job satisfaction, while role overload was negatively significantly

Table 7 Multiple regression of factors related to role ambiguity

	Model 1	Model 2	Model 3	Model 4
	$\beta$ (95% CI)	$\beta$ (95% CI)	$\beta$ (95% CI)	$\beta$ (95% CI)
<b>Demographic characteristics</b>				
Age	0.049 (-0.064 to 0.171)	-0.074 (-0.072 to 0.206)	0.085 (-0.043 to 0.227)	0.001 (-0.005 to 0.008)
Gender	0.041 (-0.101 to 0.226)	0.062 (-0.079 to 0.250)	0.061 (-0.070 to 0.253)	0.001 (-0.006 to 0.009)
Marital status	0.006 (-0.153 to 0.172)	0.057 (-0.153 to 0.175)	0.004 (-0.153 to 0.165)	0.005 (-0.001 to 0.015)
Education level	-0.074 (-0.228 to 0.042)	0.007 (-0.179 to 0.111)	-0.023 (-0.170 to 0.112)	-0.003 (-0.010 to 0.004)
<b>Work-related factors</b>				
Place of work		-0.027 (-0.503 to -0.031)*	-0.173 (-0.547 to -0.093)**	-0.001 (-0.013 to 0.009)
Urban area		-0.144 (-0.256 to 0.291)	0.092 (-0.098 to 0.489)	0.006 (-0.002 to 0.027)
Service post		0.008 (-0.200 to 0.226)	-0.005 (-0.217 to 0.200)	0.002 (-0.006 to 0.014)
Clinical role		0.008 (-0.345 to 0.108)	-0.009 (-0.244 to 0.207)	0.004 (-0.002 to 0.020)
Intention to quit		-0.055 (-0.342 to 0.732)	0.029 (-0.376 to 0.674)	-0.001 (-0.028 to 0.022)
<b>Job tasks</b>				
ANC/PNC visits			-0.077 (-0.538 to 0.127)	-0.012 (-0.049 to -0.017)***
Salt testing			0.189 (0.296 to 1.128)**	-0.001 (-0.024 to 0.017)
GMP			0.278 (0.741 to 2.094)**	-0.007 (-0.073 to -0.003)*
TB			-0.025 (-0.334 to 0.229)	0.005 (-0.003 to 0.024)
HTS			-0.058 (-0.340 to 0.125)	0.006 (0.000 to 0.022)
Drug dispensing			-0.103 (-0.333 to 0.008)	-0.002 (-0.011 to 0.005)
VHC meetings			-0.095 (-0.647 to 0.089)	0.003 (-0.010 to 0.025)
Family planning			-0.040 (-0.245 to 0.114)	0.000 (-0.009 to 0.008)
HBC			0.025 (-0.360 to 0.529)	-0.003 (-0.031 to 0.011)
Nutrition			-0.056 (-0.451 to 0.150)	0.001 (-0.013 to 0.016)
<b>PCA components</b>				
Supervisor				0.752 (0.550 to 0.558)***
Role clarity				0.498 (0.405 to 0.413)***
Guidelines				0.373 (0.275 to 0.283)***

Model 1: adjusted for age, gender, marital status and education level; module 2: adjusted for variables in module 1 and work-related variables; module 3: adjusted for variables in module 1 and job tasks; module 4: adjusted for variables in module 3 and factors identified in PCA for role ambiguity.

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

ANC/PNC, antenatal care/postnatal care; GMP, growth monitoring promotion; HTS, HIV testing service; PCA, principal component analysis; TB, tuberculosis; VHC, village health committee.

**Table 8** Multiple regression of factors related to role conflict

	Model 1	Model 2	Model 3	Model 4
	$\beta$ (95% CI)	$\beta$ (95% CI)	$\beta$ (95% CI)	$\beta$ (95% CI)
<b>Demographic characteristics</b>				
Age	-0.133 (-0.307 to -0.034)*	-0.125 (-0.317 to -0.003)*	-0.137 (-0.329 to -0.023)*	-0.004 (-0.023 to 0.013)
Gender	0.061 (-0.080 to 0.297)	0.035 (-0.124 to 0.247)	0.062 (-0.073 to 0.292)	0.002 (-0.017 to 0.025)
Marital status	0.004 (-0.182 to 0.196)	0.023 (-0.146 to 0.229)	0.026 (-0.136 to 0.227)	-0.003 (-0.025 to 0.016)
Education level	-0.004 (-0.163 to 0.150)	-0.083 (-0.286 to 0.043)	-0.123 (-0.342 to -0.020)*	0.004 (-0.012 to 0.025)
<b>Work-related factors</b>				
Place of work		0.193 (0.159 to 0.687)***	0.179 (0.137 to 0.644)*	0.000 (-0.030 to 0.029)
Urban area		0.086 (-0.091 to 0.511)	0.069 (-0.155.492)	-0.001 (-0.040 to 0.034)
Service post		-0.065 (-0.369 to 0.107)	-0.057 (-0.348 to 0.120)	0.014 (0.001 to 0.055)*
Clinical role		-0.018 (-0.301 to 0.211)	-0.026 (-0.321 to 0.189)	-0.010 (-0.055 to 0.003)
Intention to quit		0.075 (-0.161 to 1.065)	0.065 (-0.205 to 0.993)	0.006 (-0.032 to 0.106)
<b>Job tasks</b>				
ANC/PNC visits			-0.054 (-0.527 to 0.201)	-0.007 (-0.065 to 0.020)
Salt testing			-0.132 (-0.997 to -0.108)*	-0.017 (-0.122 to -0.019)**
GMP			0.241 (0.685 to 2.229)***	-0.005 (-0.120 to 0.060)
TB			-0.021 (-0.365 to 0.263)	0.004 (-0.026 to 0.046)
HTS			0.031 (-0.197 to 0.330)	-0.003 (-0.036 to 0.024)
Drug dispensing			0.094 (-0.018 to 0.367)	0.005 (-0.013 to 0.032)
VHC meetings			-0.222 (-1.195 to -0.354)***	-0.011 (-0.088 to 0.011)
Family planning			-0.126 (-0.446 to -0.042)	0.004 (-0.016 to 0.030)
HBC			0.186 (0.252 to 1.233)	0.008 (-0.027 to 0.087)
Nutrition			-0.009 (-0.370 to 0.316)	-0.009 (-0.069 to 0.009)
<b>PCA components</b>				
Intrasender conflict				0.883 (0.770 to 0.790)***
Intrale and person role conflict				0.484 (0.413 to 0.434)***

Model 1: adjusted for age, gender, marital status and education level; module 2: adjusted for variables in module 1 and work-related variables; module 3: adjusted for variables in module 1 and job tasks; module 4: adjusted for variables in module 3 and factors identified in PCA for role conflict.

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

ANC/PNC, antenatal care/postnatal care; GMP, growth monitoring promotion; HBC, home-based care; HTS, HIV testing service; PCA, principal component analysis; TB, tuberculosis; VHC, village health committee.

Table 9 Multiple regression of factors related to role overload				
	Model 1	Model 2	Model 3	Model 4
	$\beta$ (95% CI)	$\beta$ (95% CI)	$\beta$ (95% CI)	$\beta$ (95% CI)
<b>Demographic characteristics</b>				
Age	-0.036 (-0.195 to 0.098)	-0.060 (-0.255 to 0.090)	-0.059 (-0.254 to 0.094)	0.002 (-0.003 to 0.009)
Gender	0.038 (-0.131 to 0.276)	0.031 (-0.147 to 0.264)	0.054 (-0.107 to 0.310)	0.003 (-0.001 to 0.014)
Marital status	-0.009 (-0.220 to 0.187)	0.005 (-0.197 to 0.217)	0.034 (-0.142 to 0.271)	0.000 (-0.007 to 0.007)
Education level	0.108 (0.002 to 0.339)*	0.082 (-0.053 to 0.312)	0.071 (-0.072 to 0.296)	-0.003 (-0.012 to 0.001)
<b>Work-related factors</b>				
Place of work	0.040 (-0.201 to 0.386)	0.040 (-0.201 to 0.386)	0.020 (-0.245 to 0.337)	0.002 (-0.005 to 0.015)
Urban area	0.015 (-0.300 to 0.380)	0.015 (-0.300 to 0.380)	-0.043 (-0.497 to 0.268)	0.002 (-0.009 to 0.018)
Service post	0.012 (-0.237 to 0.290)	0.012 (-0.237 to 0.290)	0.015 (-0.236 to 0.298)	-0.001 (-0.011 to 0.008)
Clinical role	-0.088 (-0.520 to 0.047)	-0.088 (-0.520 to 0.047)	-0.100 (-0.563 to 0.023)	0.010 (0.016 to 0.036)***
Intention to quit	-0.043 (-0.954 to 0.396)	-0.043 (-0.954 to 0.396)	-0.068 (-1.121 to 0.241)	-0.002 (-0.039 to 0.009)
<b>Job tasks</b>				
ANC/PNC visits			0.127 (-0.001 to 0.827)*	-0.005 (-0.031 to -0.001)*
Salt testing			-0.097 (-0.961 to 0.066)	-0.004 (-0.035 to 0.002)
GMP			0.092 (-0.284 to 1.475)	0.004 (-0.008 to 0.055)
TB			0.048 (-0.237 to 0.489)	0.000 (-0.012 to 0.014)
HTS			-0.022 (-0.051)	-0.004 (-0.021 to 0.001)
Drug dispensing			-0.004 (-0.008)	-0.001 (-0.009 to 0.007)
VHC meetings			0.088 (0.327)	-0.002 (-0.026 to 0.008)
Family planning			-0.076 (-0.158)	-0.002 (-0.013 to 0.004)
HBC			-0.024 (-0.103)	0.003 (-0.007 to 0.035)
Nutrition			0.084 (0.284)	0.000 (-0.015 to 0.013)
<b>PCA components</b>				
Time pressure				0.692 (0.663 to 0.670)***
Task overload				0.591 (0.560 to 0.568)***
Work prioritisation				0.313 (0.341 to 0.349)***

Model 1: adjusted for age, gender, marital status and education level; module 2: adjusted for variables in model 1 and work-related variables; module 3: adjusted for variables in module 1 and work-related variables; module 4: adjusted for variables in model 1 and work-related variables; module 3: adjusted for variables in module 2 and job tasks; module 4: adjusted for variables in model 3 and factors identified in PCA for role overload.

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

ANC/PNC, antenatal care/postnatal care; GMP, growth monitoring promotion; HBC, home-based care; HTS, HIV testing service; PCA, principal component analysis; TB, tuberculosis; VHC, village health committee.

**Table 10** Multiple regression of factors related to job satisfaction

	Model 1	Model 2	Model 3	Model 4
	$\beta$ (95% CI)	$\beta$ (95% CI)	$\beta$ (95% CI)	$\beta$ (95% CI)
<b>Demographic characteristics</b>				
Age	-0.010 (-0.081 to 0.067)	0.081 (-0.031 to 0.139)	0.075 (-0.035 to 0.136)	0.017 (-0.015 to 0.037)
Gender	-0.017 (-0.117 to 0.087)	-0.004 (-0.105 to 0.097)	0.011 (-0.093 to 0.113)	0.008 (-0.024 to 0.039)
Marital status	-0.017 (-0.119 to 0.086)	-0.009 (-0.111 to 0.095)	0.002 (-0.101 to 0.104)	0.018 (-0.014 to 0.049)
Education level	0.013 (-0.075 to 0.095)	0.064 (-0.040 to 0.140)	0.050 (-0.052 to 0.130)	0.016 (-0.017 to 0.041)
<b>Work-related actors</b>				
Place of work		0.020 (-0.119 to 0.165)	0.026 (-0.112 to 0.171)	-0.055 (-0.062)***
Urban area		-0.149 (-0.353 to -0.028)*	-0.176 (-0.410 to -0.040)*	-0.073 (-0.094)***
Service post		-0.142 (-0.278 to -0.020)*	-0.133 (-0.272 to -0.008)*	-0.053 (-0.056)***
Clinical role		-0.086 (-0.252 to 0.027)	-0.099 (-0.275 to 0.016)	-0.012 (-0.063 to 0.030)
Intention to quit		0.075 (-0.098 to 0.594)	0.087 (-0.062 to 0.634)	0.017 (-0.051 to 0.164)
<b>Job tasks</b>				
ANC/PNC visits			0.028 (-0.160 to 0.248)	-0.005 (-0.071 to 0.054)
Salt testing			-0.117 (-0.513 to -0.003)*	-0.023 (-0.131 to 0.028)
GMP			-0.128 (-0.842 to 0.049)	0.001 (-0.140 to 0.145)
TB			0.000 (-0.182 to 0.181)	0.026 (-0.021 to 0.090)
HTS			0.129 (0.000 to 0.298)*	0.003 (-0.043 to 0.049)
Drug dispensing			0.076 (-0.035 to 0.183)	-0.011 (-0.044 to 0.023)
VHC meetings			0.013 (-0.241 to 0.291)	-0.009 (-0.099 to 0.064)
Family planning			-0.116 (-0.232 to -0.003)*	-0.010 (-0.046 to 0.026)
HBC			0.017 (-0.253 to 0.324)	0.007 (-0.074 to 0.104)
Nutrition			0.007 (-0.179 to 0.201)	0.003 (-0.054 to 0.062)
<b>PCA components</b>				
Advancement and recognition				0.480 (0.208 to 0.241)***
Work conditions and organisation policies				0.241 (0.097 to 0.128) ***
Supervision				0.371 (0.158 to 0.188) ***
Ability utilisation				0.300 (0.127 to 0.163)***
Social service				0.375 (0.157 to 0.187)***
Activity				0.466 (0.202 to 0.233)***

Model 1: adjusted for age, gender, marital status and education level; module 2: adjusted for variables in module 1 and work-related variables; module 3: adjusted for variables in module 2 and job tasks; module 4: adjusted for variables in module 3 and factors identified in PCA for job satisfaction.

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

ANC/PNC, antenatal care/postnatal care; GMP, growth monitoring promotion; HBC, home-based care; HTS, HIV testing service; PCA, principal component analysis; TB, tuberculosis; VHC, village health committee.

related to job satisfaction. The finding is consistent with the findings of earlier studies conducted in other professions.<sup>45</sup> However, role conflict was negatively insignificantly related to job satisfaction and for this reason we will only discuss the findings of role ambiguity, role overload and job satisfaction. Other studies conducted in other professions have reported similar findings.<sup>46</sup> Although the levels of role ambiguity and role overload are lower and mild in HSAs, there is need by government to initiate measures to control these role stressors in order to ensure continued job satisfaction and good work performance among HSAs.

### Role overload

In terms of role overload, the most important factor was time pressure. This finding is in agreement with Davis *et al*,<sup>47</sup> who found CHWs working under pressure to provide services related to their new roles. Evidence from literature suggests that when employees are overloaded with tasks they tend to prioritise tasks they feel are important.<sup>48</sup> For example, tasks such as immunisation of children are considered important and this is why in this study, vaccination and growth monitoring promotion were frequently conducted about 1–5 times per week by over 70% of the respondents.

Additionally, the addition of clinical tasks to existing HSAs' job tasks is related to role overload. Other literature evidence is in support of this assertion as similar findings have been reported elsewhere following introduction of additional roles.<sup>49</sup> Other literature evidence suggests the introduction of clinical roles among HSAs in Malawi has expanded their role and divided their time and attention. It is further argued in the literature that HSAs spend most of their time at the health facility unlike at the community.<sup>50</sup> Furthermore, HSAs are engaged in certain roles, of which some are incompatible with their traditional roles.<sup>51</sup> Arguably, the changes made to the HSAs' roles require new skills, sufficient time and quality supervision for them to be effectively delivered at the community level.<sup>51</sup> Previously, the HSAs were only performing a few preventive health tasks such as water, sanitation and hygiene (WASH), immunisations and growth monitoring.<sup>52</sup> Increased health demands at the community level and the critical shortage of health workers have necessitated the addition of new roles to the HSAs.<sup>53</sup> Evidence from the literature suggests role stressors among employees are likely to contribute to lower job satisfaction and poor job performance if mitigation measures are not put in place.<sup>54</sup> Therefore, it is imperative for Malawi Ministry of Health to consider this when adding new roles to HSAs.

Furthermore, it is reported that the addition of new clinical roles to the CHWs has affected their traditional roles to the extent that some of their traditional roles have been forgotten.<sup>55</sup> The tasks that were identified as predictors for role overload were growth monitoring and HTS. However, considering the significant health gains that the Ministry of Health in Malawi has made in achieving four

out of eight millennium development goals (MDGs) of which three are health related: reducing child mortality, combating HIV and AIDS, malaria and other diseases,<sup>56</sup> this task shifting is necessary and relevant for the Malawi Ministry of Health. Much of this achievement is attributed to HSAs' work at the community level. Looking at these achievements, their positive health outcomes and the growing demands for healthcare, it is important to continue with the task shifting but with some regulation. Although the guidelines for HSAs' task shifting are available, it would be important if the Ministry of Health went further to introduce an independent body for HSAs' task regulation such as the Medical Council of Malawi or the Nurses Council of Malawi.

<sup>56</sup>

### Role ambiguity

The most important factor for role ambiguity in this study was the supervisor. Additionally, the HSAs curative tasks were negatively related to role ambiguity. These results suggest that the HSAs' supervision and the introduction of clinical roles have a contribution towards HSA role ambiguity.

The HSAs in Malawi are well known for being poorly supervised.<sup>57</sup> Evidence from the literature suggests supervision should be done regularly and that the supervisors should be experts in the field and should be able to provide new knowledge and actively engage the supervisees during supervision.<sup>58</sup> Currently, the AEHOs are considered as the principal supervisors for the HSAs and are supported by senior HSAs, clinical officers and community nurses. In light of the expansion of the HSAs' role, supervision really needs to be given a priority as the country has a critical shortage of clinicians and nurses to provide the requisite supervision.<sup>59</sup> Some of the barriers to effective supervision of CHWs that have been reported include travel expenses and logistics for face-to-face interaction meetings with the CHWs, lack of appropriate supervisory tools, inadequate understanding of CHW roles, and the poor general perception managers have towards CHWs supervision, lack of supervisory training and resources to provide a conducive climate for CHWs and their oversight due to some existing bureaucracies.<sup>60</sup>

Additionally, the place of work, either at a health centre or district hospital, had a role in terms of role ambiguity where HSAs at a health centre had high role ambiguity compared with their colleagues at the district hospital. This may be related to the supervision factor earlier alluded to. Evidence from the literature suggests role ambiguity arises when trainees are unsure of supervisory expectations for their performance or evaluation. Further evidence indicates that in Malawi, there are challenges with the supervision of HSAs due to human resources shortage, lack of financial resources and lack of transportation for mobility by supervisors.<sup>61</sup>

### Job satisfaction

In terms of satisfaction, extrinsic factors (supervision, work conditions and organisation policies) and intrinsic factors (advancement and recognition, ability utilisation, social service and activity) were identified as factors for HSAs job satisfaction. The intrinsic factor of 'advancement and recognition' was identified as the major predictor for job satisfaction. This finding is consistent with the findings of other researchers where compensation and advancement have been identified as the most important predictors for job satisfaction.<sup>62–65</sup> Similarly, the HSAs in Malawi are lacking good compensation and a clear career structure for their advancement, which is demotivating and dissatisfying considering that the majority of them work in very rural and remote areas where communication is a challenge. The current practice for HSAs advancement is that they have to get back to school and improve their grades and later enrol in a college to train either as a nurse or medical assistant Ntopi.<sup>66</sup> In light of this, there is need to understand more about their needs and that it is important that they are fully supported in order to ensure their optimisation and productivity to achieve improved health outcomes.<sup>67–70</sup> Bacotic<sup>71</sup> suggests job satisfaction should be looked at as key to the retention of employees. It is quite surprising to note that in government, there are other cadres with short duration of training as HSAs but are considered for promotion within their career structure without going back to school. It is therefore important that government should look at these critical issues to ensure that HSAs remain motivated and satisfied in their work. This study therefore urges policy makers at the Ministry of Health to review the community health strategy to ensure that HSAs have a clear career structure for advancement.

### Sociodemographic variables and the role stressors and job satisfaction

In addition to the predictors discussed above, sociodemographic characteristics such as work location and years at service post were significantly associated with HSAs role stressors and job satisfaction.

First, HSAs' work location (either rural or urban) was significantly related to role ambiguity and job satisfaction. HSAs in rural areas had slightly high role ambiguity, role overload and job satisfaction levels compared with those in urban areas. This finding is in agreement with findings of another study in India on impact of job stress on urban and rural employees, which found location had an impact on the job stress of employees.<sup>72</sup>

The role ambiguity and role overload in HSAs might be explained by the fact that many HSAs are deployed in rural areas, in health centre catchment areas, where they are likely to experience challenges in supervision compared with their colleagues in urban area. However, this finding is inconsistent with the findings of earlier studies conducted in other professions that found no significant associations based on location (urban, suburban and rural settings).<sup>73</sup> Additionally, work location was related

to job satisfaction where the HSAs working in rural areas were slightly more satisfied than their colleagues in urban area. This finding is consistent with findings of Liu *et al*,<sup>74</sup> who found that rural health workers in 11 western provinces of China with slight job satisfaction.

Second, HSAs' years at service post were significantly related to job satisfaction. This finding is consistent with findings from earlier studies conducted on job satisfaction where they found years at service post (tenure) had a relationship with job satisfaction.<sup>75</sup>

Third, gender was significantly related to role overload. This finding is consistent with the finding by Duc *et al*,<sup>76</sup> who found that gender had significant differences in the variances of the employees at a Bank for Investment and Development of Vietnam in Quangnam. Female employees' lives in Malawi is divided between home and work as they have to fulfil both familial and work obligations. However, other literature has found that there is no significant relationship between gender and role overload.<sup>77</sup>

In summary, the findings of this study have indicated that sociodemographic variables of HSAs have a role to play on their role stressors and the job satisfaction of HSAs. Therefore, it is important for Government of Malawi and all that are involved in HSAs' deployment to take note of the effect of these sociodemographic variables.

### Limitations

One of the major limitations of this study is that it is a cross-sectional study and its results cannot institute causality among the relationships established.

### CONCLUSION

Considering that some HSAs' tasks are correlated to role stressors, it is important that they should be addressed as a matter of priority. If mitigation measures are not initiated, the role stressors would very likely contribute to low performance at work and lower job satisfaction among HSAs. Additionally, stress conditions such as depression, dissatisfaction, anxiety and tension would arise.<sup>78</sup> Therefore, there is an urgent need by the authorities and partners to join hands to address these role stressors for the HSAs to continue enjoying high job satisfaction and good performance at work. This study, therefore, would like to recommend that government should introduce measures that would control role stressors among HSAs. This study, therefore, proposes to government to introduce an independent regulatory body that would regulate HSAs' tasks in Malawi. Additionally, supervision of HSAs should be intensified to overcome the role stressors. Since the HSAs role is broader than the roles of other health cadres, it would be imperative to adopt an integrated approach towards the supervision of HSAs. This study, therefore, would like to propose interprofessional supervision (IPS) as an approach for the effective supervision of the HSAs in order to enhance HSAs' supervision in Malawi. IPS involves supervision by supervisors from different professional disciplines.<sup>79</sup> This would help to

address the challenges faced in the supervision of the HSAs, as their role is more interprofessional requiring supervisors from different health professional backgrounds. We propose this to start right at college by letting students from different professional background working and learning together in a class to ensure that effective teams for supervision are formed for greater performance and improved health outcomes.

**Acknowledgements** We, the authors, would like to thank all health surveillance assistants who participated in their study.

**Collaborators** Simon Willard Ntopi

**Contributors** SN designed the study and wrote the protocol (corresponding author), EC supervised the work of the research carried out and critically reviewed the manuscript for content and AM was responsible for statistical analysis. All authors contributed to critical revisions of the manuscript. 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 and public involvement** Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

**Patient consent for publication** Not required.

**Ethics approval** Ethical clearance was obtained from the College of Medicine Research Ethics Committee of Malawi (Certificate No. P.11/16/2054).

**Provenance and peer review** Not commissioned; externally peer reviewed.

**Data availability statement** The data that support the findings of this study are available from the corresponding author, upon reasonable request

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