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Original Research Article

Assessment of skill performance in non-communicable disease services and job satisfaction among community health officers at Ayushman Arogya Mandirs in Raipur district: a cross-sectional study

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ABSTRACT

Background: The Community Health Officers (CHOs) have a crucial position in the delivery of comprehensive primary health care services, especially for non-communicable diseases (NCDs). Their skill performance and job satisfaction are directly linked with the quality of service delivery and the success of the health system. This study aimed to assess the level of skill performance in selected NCD services like hypertension, diabetes mellitus, and oral cancer, and assess the job satisfaction among CHOs in Raipur district.
Methods: The cross-sectional study was carried out from April to November 2024 in 70 CHOs from Ayushman Arogya Mandirs in Raipur district, selected by simple random sampling. A pretested semi-structured proforma based on the training module and McCloskey/Mueller Satisfaction Scale (MMSS) was used for collecting the data. Skill performance in NCD services like hypertension, diabetes mellitus, and oral cancer was measured by a binary scoring system in four domains: history taking, examination, diagnosis, and management.
Results: The study found that the mean age of the participants was 28.86±3.4 years, with 85.7% being females. The Majority (60%) of study participants showed an average level of skill performance. Most participants (>95%) performed well in the diagnosis and management of hypertension and diabetes. In terms of job satisfaction, 68.6% reported a moderate level of job satisfaction among Community Health Officers.
Conclusions: The study found that the majority of Community Health Officers performed at an average level of skill performance with a moderate level of job satisfaction. Induction training was found to have a significant effect on the performance of Community Health Officers.

Keywords: Community Health Officers, Job satisfaction, Non-communicable disease, Skills performance

INTRODUCTION

The role of the Community Health Officer (CHO) is essential in mid-level healthcare. CHOs are responsible for providing a wider range of important healthcare services as part of Comprehensive Primary Health Care (CPHC). Their duties include leading primary care teams at Health and Wellness Centres (HWCs), offering clinical management and outpatient care, and ensuring smooth coordination for ongoing patient care. By promoting integrated service delivery, CHOs help tackle healthcare disparities in the community.[1] The new NMC bill refers to them as community health providers. An effective health workforce is composed of a layered structure with diverse skills, encompassing various roles that ensure competent, continuous, and compassionate care. Ultimately, their deployment will lower referral rates and reduce treatment delays in overburdened hospitals by enhancing primary healthcare and alleviating the patient load on secondary and tertiary care institutions.[2,3] The

World Health Organization (WHO) defines job satisfaction as a pleasurable or positive emotional state resulting from one's perception of their job or job experiences. There are two ways to measure job satisfaction: individually and globally.[4]

A person's job satisfaction can be influenced by several factors. These factors include pay, financial benefits, transparency about promotions, the work environment, relationships with colleagues, and team dynamics. Most people spend a large portion of their waking hours at work. Research shows that work significantly impacts people's self-image and self-worth.[5-7] In India, incentives, education, training, job security, working conditions, relationships with others, recognition, organizational structure, and infrastructure all affect how well community health workers (CHWs) perform.[8,9] The present study was carried out to assess the level of skill achieved/performances in major non-communicable diseases i.e. (hypertension, diabetes mellitus and oral cancer), and job satisfaction, as well as to analyses the association between sociodemographic characteristics and skill performance level of Community Health Officers.

METHODS

A cross-sectional study took place in the Raipur district of Chhattisgarh from April 2024 to November 2024. The participants in the study were community health officers who were posted at Ayushman Arogya Mandirs, and simple random sampling methods were used to choose the participants**.**

Inclusion criteria

CHOS employed selected AAMs of Raipur district and were willing to participate in the study, and CHOS who have completed at least 1 year of their joining at the current working place.

Exclusion criteria

Those CHOS who were absent despite the 3 AAM visit.

Study duration

The study data collection was conducted between April 2024 and November 2024.

Sample size

The sample size for the study was collected based on the target study (2022), which reported a standard deviation of 11 of competence in Chhattisgarh state, assuming 95% confidence level, and the minimum sample size calculated was 70.[10]

$n = \frac{Z(1-\alpha_{/2})^2 \times \sigma^2}{(M.E.)^2} = \frac{(1.96)^2 \times (11)^2}{(2.61)^2} = 68.34 \approx 70$ Community Health Officer

Where, n = sample size, Z $(1-\alpha_{/2})$=1.96 at 95% Confidence Interval, σ=Standard Deviation=11 (95), ME (Margin of Error) = $Z \times \frac{\sigma}{\sqrt{n}} = 1.96 \times \frac{11}{\sqrt{68}} = 2.61$

Sampling method

A list of CHOs who were employed at AAM was obtained from the Chief Medical and Health Officer of Raipur district. There are a total of 4 blocks in the Raipur district, and the CHO posted in AAM was assigned a random number. The following study participants were selected using a simple random technique until the required sample size was achieved.

Data collection

The selected CHOs who were employed at AAM were visited by the investigator. Written informed consent from study participants in the study was obtained before examining their clinical skills. A semi-structured pretested proforma was created based on the CHO induction training module and their study materials, and for levels of satisfaction, the MMSS scale was used for data collection. The proforma consisted of two part which were general information and components of non-communicable disease (HTN, DM Oral cancer). The clinical skills of CHO were examined and observed as per standard operating procedure and training guidelines. History taking, examination, and investigation, diagnosis, and management were included for the following hypertension, DM, and Oral cancer components of NCD.

Statistical analysis

The gathered information was entered in a Microsoft 365 Excel, where it was verified for completeness and accuracy before undergoing appropriate statistical analysis. Following the data analysis, the results were displayed as tables and graphs, employing frequency and percentage. Each observation under the domain of this study was assessed, and a binary scoring approach was utilized, scored as 0 and 1 (performed = 1, not performed = 0). Using this assessment method, an aggregate skill performance score was developed for each, and a statistical summary was expressed as Mean ± Standard Deviation (SD). Additionally, an overall performance score was calculated by summing the overall performance scores of selected components of NCD. Levels of performance were categorized using Z-scores across the total performance scores. Based on the Z-score distribution: A score of ≤-1 was classified as poor performance, A score between -1 and 1 was categorized as average performance, and a score of ≥1 was interpreted as a good performance. The Chi-square test was used to find the association between the sociodemographic profile and the skill performance level. P value <0.05 was considered statistically significant. The manuscript was prepared in accordance with the Strengthening the

Reporting of Observational Studies in Epidemiology (STROBE) guidelines.[11]

Job satisfaction

The MMSS scale, designed to measure the job satisfaction of Community Health Officers. The scale consisted of 31 items that captured eight aspects of satisfaction: satisfaction with extrinsic rewards, scheduling, family/work balance, coworkers, interaction, professional opportunities, praise/recognition, and control/responsibility. Each item is rated on a five-point Likert scale (5 = very satisfied, 4 = moderately satisfied, 3 = neither satisfied nor dissatisfied, 2 = moderately dissatisfied, and 1 = very dissatisfied).[12]

Internal reliability

The internal consistency reliability of the 31-item McCloskey/Mueller Satisfaction Scale was checked by evaluating the alpha coefficient of Cronbach. The alpha coefficient for the scale was 0.89, which proves the internal consistency reliability of the scale.

Operational definition

The standardized patients are people, either real patients or laypersons, who have been carefully coached and trained to portray a patient in a standardized manner. Such portrayals vary from simulating the entire patient to isolated attributes such as historical and physical findings, body language, emotion, and personality characteristics. A similar term, 'simulated patient', is often used as well.[13]

Ethical consideration

Institutional Ethics Committee of Pt. J. N. M. Medical College approval was taken before the start of the study.

RESULTS

In the current study, all four blocks of Raipur district were included, where Aarang block contained the highest percentage of study participants, 21 (30%), followed by Tilda and the Abhanpur block, which comprises 18 and 16 (22.9%), respectively, and the Dharsiwa block has the lowest percentage of study participants, 15 (21.4%) (Table 1).

The mean age of the study participants was 28.86±3.4 years, and most of the study participants 22 (31.4%) belonged to the 27-29 years age group, and only 04 (5.7%) of the study participants belonged to the 36-38 years age group, 60 (85.7%) were female, and only 10 (14.3%) were male, 39 (55.7%) belongs to OBC category which was highest and only 8 (11.4%) belong to UR category 44 (62.9%) were married followed by 25 (35.7%) were unmarried and only 1 (1.4%) was divorced. Most of the study participants, 54 (77.1%), did not reside at the center (AAM), and 16 (22.9%) did reside at the center. The mean distance was 7.50±4 km for study participants who travelled from their residence to the center (AAM). The mean month of work experience of the study participants was 35.54±13.7, and most of the study participants, 21 (30%), had 28-35 months of experience; only 04 (5.7%) study participants had work experience of less than 19 months. The mean number of training sessions of the study participants were 14.67±6.7, and the majority of study participants had 10-15 training sessions. Out of 70, 49 (70%) of the study participants received induction training, while only 21 (30%) did not receive any induction training (Table 2).

Table 1: Distribution of study participants according to their block (n=70).

Block	Frequency	Percentage
Arang	21	30.0
Abhanpur	16	22.9
Dharsiwa	15	21.4
Tilda	18	25.7

Table 2: Socio-demographic profile of study participants (n=70).

Variables	Categories	Frequency	Percentage
Age (in years)	24-26	21	30
	27-29	22	31.4
	30-32	13	18.6
	33-35	10	14.3
	36-38	04	5.7
Gender	Female	60	85.7
	Male	10	14.3
Caste	UR	8	11.4
	OBC	39	55.7
	SC	10	14.3
	ST	13	18.6
Marital status	Married	25	35.7
	Un-married	44	62.9
	Divorced	1	1.4
Residing at the centre	No	54	77.1
	Yes	16	22.9
Distance of contre from residence	12-19	4	5.7
	20-27	18	25.7
	28-35	21	30
	36-43	3	4.3
	44-51	13	18.6
	52-60	11	15.6
Training status	No	21	30.0
	Yes	49	70.0
Number of training	4-9	16	22.8
	10-15	27	38.6
	16-21	18	25.7
	22-27	5	7.1
	28-33	3	4.3
	≥34	1	1.4

For hypertension, none of the participants completed all steps in the history-taking and examination components. In contrast, a very high proportion of participants correctly completed the diagnosis (95.7%) and management (95.7%) steps. The overall mean total score for hypertension-related skills was 30.63±4.4 out of a maximum possible score of 46. Regarding diabetes mellitus, only 4.3% of participants completed all steps of history taking, while none completed all steps of examination, but a high proportion of participants demonstrated correct performance in diagnosis (97.1%) and management (98.6%) steps. The overall total mean score for diabetes mellitus skills was 29.40±4.2 out of 41maximum possible score. For oral cancer, only 8.6% completed all steps in history taking, and 24.3% completed all examination steps; only 25.7% of participants correctly performed the diagnosis step, but 97.1% correctly performed the management step. The overall total mean score for oral cancer-related skills was 7.99±4.2 out of 16 maximum possible score (Table 3).

Table 3: Distribution of study participants by skill scores on selected non-communicable diseases (n=70).

Variables	Hypertension				Diabetes mellitus				Oral cancer			
	Min-max score	Perform all steps* by CHO		Performed at least one step by CHO (Mean±SD)	Min-max score	Perform all steps* by CHO		Performed at least one step by CHO (Mean±SD)	Min-max score	Perform all steps* by CHO		Performed at least one step by CHO (Mean±SD)
		N	%			N	%			N	%	
History taking	0-13	00	0.0	7.13±1.4	0-9	03	4.3	5.86±1.2	0-5	06	8.6	3.24±0.9
Examination	0-30	00	0.0	20.60±3.6	0-29	00	0.0	20.60±3.5	0-9	17	24.3	3.51±3.4
Diagnosis	0-1	67	95.7	0.96±0.2	0-1	68	97.1	0.97±0.10	0-1	18	25.7	0.26±0.40
Management	0-2	67	95.7	1.94±0.2	0-2	69	98.6	1.97±0.20	0-1	68	97.1	0.97±0.10
Total score	0-46	00	0.0	30.63±4.4	0-41	00	0.0	29.40±4.2	0-16	03	4.3	7.99±4.2

* Achieved Maximum Scores, CHO: Community Health Officer SD: Standard Deviation.

For anthropometry measurement, approximately 40 (57.1%) of the participants achieved the maximum possible score (3) for weight measurement, whereas only 04 (5.7%) of the participants achieved the maximum possible score in the height measurement, and none of the study participants achieved the maximum possible score (04) for waist circumference measurement (Table 4).

Table 4: Distribution of study participants by skill scores on anthropometry measurement (n=70).

Anthropometry variables	Min-max score	Perform all steps* by CHO		Performed at least one step by CHO
		N	%	
Weight measurement	0-3	40	57.1	2.46±0.7
Height measurement	0-7	04	5.7	4.59±1.2
Waist circumference measurement	0-4	00	0.0	0.41±0.5
BMI measurement	0-1	32	45.7	0.46±0.5
Total score	0-15	00	0.0	7.91±2.1

* Achieved Maximum Scores, CHO: Community Health Officer SD: Standard Deviation.

The overall performance of study participants in NCD services showed that the majority, i.e., 42 (60%), had average performance, 15 (21.4%) had poor performance, and only 13 (18.6%) demonstrated good performance (Figure 1).

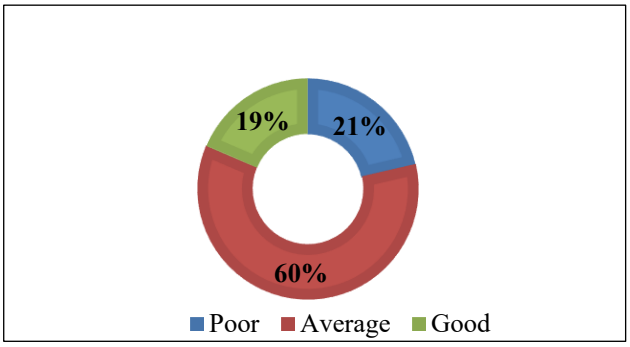

Figure 1: Distribution of study participants according to their level of skills performance (n=70).

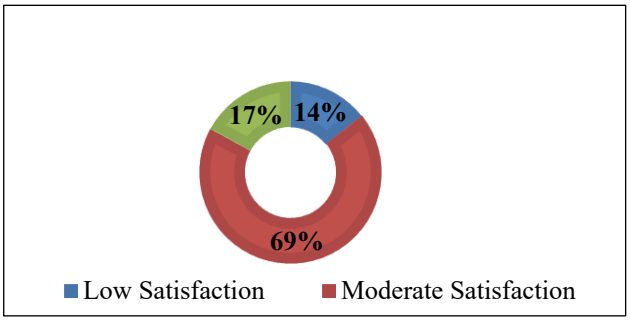

Figure 2: Distribution of study participants according to their job satisfaction (n=70).

The association between sociodemographic variables and level of skill performance showed that age, gender, work experience, residency at centers, and number of training sessions were not significantly associated (p>0.05). However, induction training showed a statistically significant association with the level of skill performance (Table 5).

For job satisfaction that the majority, 48 (68.6%), had moderate job satisfaction, followed by high satisfaction, 12 (17.1%), while 10 (14.3%) reported low job satisfaction (Figure 2).

The box plot shows the variability in the average mean scores across the MMSS subscales. Higher median scores were observed in domains such as control and responsibility, praise and recognition, and co-workers, indicating greater satisfaction in these areas. In contrast, extrinsic rewards, professional opportunities, and work family balance demonstrated comparatively lower median scores and wider variability. Several subscales specifically "Scheduling Satisfaction," "Co-Worker," "Interaction Opportunities," and "Praise and Recognition" display multiple outliers positioned below their respective lower whiskers. This suggests that while most of the samples reported high satisfaction in these areas, a distinct minority of respondents reported exceptionally low satisfaction. The "Co-Worker" subscale contains the highest frequency of these low-scoring outliers (Figure 3).

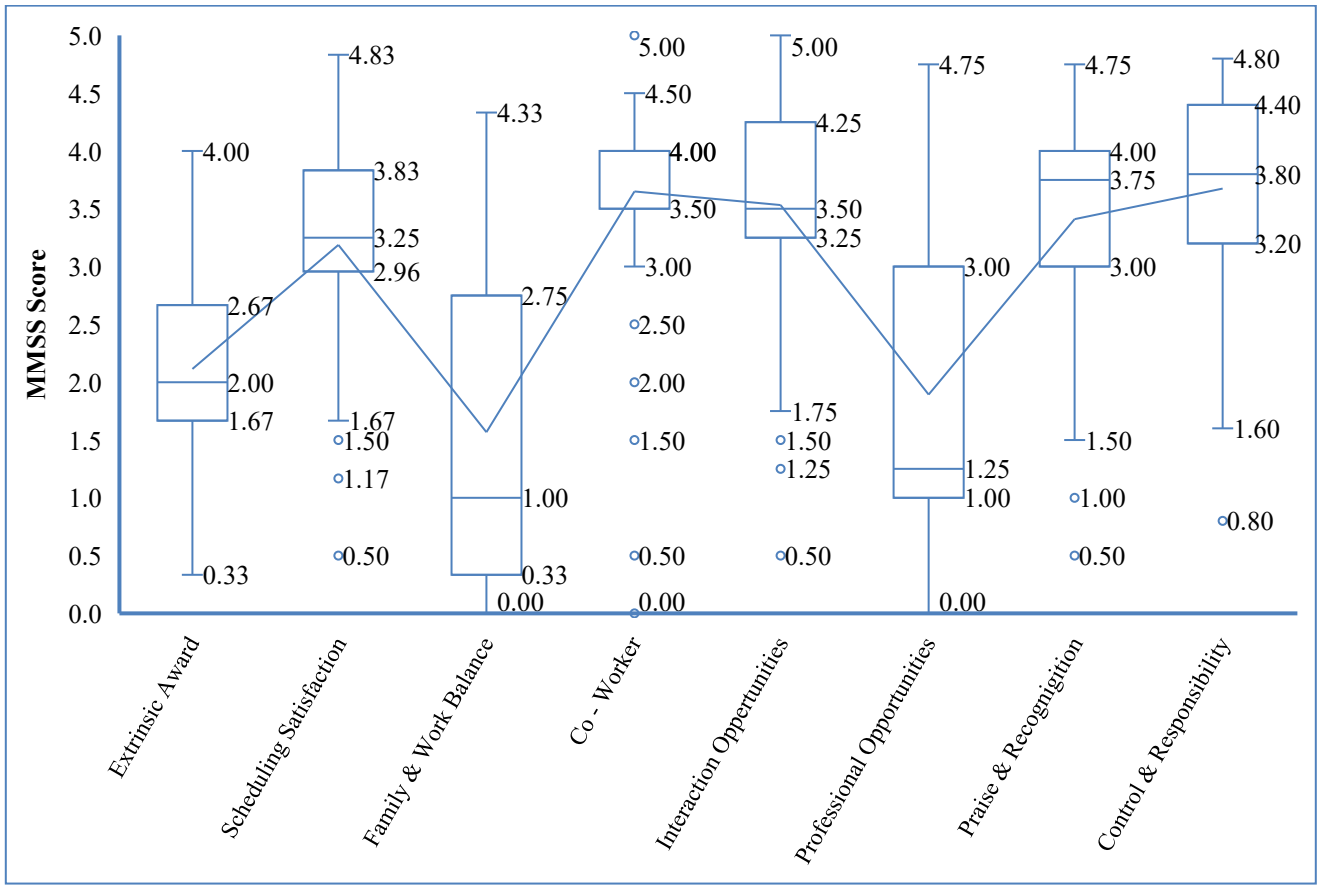

Figure 3: Distribution of average median score for the MMSS subscales among study participants (n=70).

Table 5: Association between socio-demographic profile with skill performance of study subject in NCD services (n=70).

Socio-demographic variables	Particulars	Performance score of overall services			Chi-square test
		Poor (n=14), N (%)	Average (n=46), N (%)	Good (n=10), N (%)	
Age (in years)	<30	12 (80.0)	26 (61.9)	05 (38.5)	X² - 5.082a Df = 2 P value-0.079
	≥30	03 (20.0)	16 (38.1)	08 (61.5)	
Gender	Female	14 (93.3)	36 (85.7)	10 (76.9)	X² - 1.532[a] Df = 2 P value-0.465
	Male	1 (6.7)	6 (14.3)	03 (23.1)	

Continued.

Socio-demographic variables	Particulars	Performance score of overall services			Chi-square test
		Poor (n=14), N (%)	Average (n=46), N (%)	Good (n=10), N (%)	
Work of experience (in months)	≤20	01 (6.7)	2 (4.8)	01 (7.7)	X^2 - 0.719[a] Df = 4 P value-0.949
	20-40	10 (66.7)	25 (59.5)	07 (53.8)	
	≥40	4 (26.7)	15 (35.7)	5 (38.5)	
Reside at the center	No	11 (73.3)	35 (83.3)	8 (61.5)	X^2 - 2.831[a] Df = 2 P value-0.243
	Yes	04 (26.7)	7 (16.7)	5 (38.5)	
No of training	<15	08 (53.3)	21 (50.0)	7 (53.8)	X^2 - 2.848[a] Df = 4 P value - 0.584
	15-30	07 (46.7)	17 (40.5)	6 (46.2)	
	≥30	00 (00.0)	04 (9.5)	00 (00.0)	
Induction training	No	09 (60.0)	11 (26.2)	1 (7.7)	X^2 - 9.799[a] Df = 2 P value -0.007*
	Yes	06 (40.0)	31 (73.8)	12 (92.3)	

a: Fisher's exact test or Yates Correction Factor were used instead of Chi-Square Test, Chi- square p value <0.05 has been Considered to be Statistically Significant.

DISCUSSION

The present study revealed that the participants attained a mean skill score of 30.63±4.4 for hypertension, followed by a score of 29.40±4.2 for diabetes mellitus, and 7.99±4.2 for oral cancer. The above finding stands lower than the results of a clinical vignette-based study conducted in Chhattisgarh, where community health officers recorded mean scores of 45.29%±20.69 for hypertension and 43.47%±17.47 for diabetes mellitus, respectively.[14] Furthermore, a study by Carter et al (2007) demonstrated that 65.1% of general medical practitioners failed to conduct oral mucosa screening in high-risk patients.[15] A separate study in Jodhpur revealed that trained community health officers achieved an overall diagnostic accuracy of 96.17% in oral cancer screening, exhibiting high sensitivity (83.8%) and specificity (98.3%).[16]

The majority of the 40 study participants (57.1%) obtained the highest possible score for weight assessment in anthropometry, and conversely, none of the participants achieved the maximum possible score in waist (hip) measurements. The findings from Wijedasa et al (2019) and Nebhinani et al (2020) both documented similar outcomes.[17,18]

Only 12 (17.1%) participants demonstrated a high level of job satisfaction, which is markedly lower when compared to the findings reported in studies conducted at Hargeisa Public PHC, Eastern Providence Primary Care, and Saint Paul Hospital, which documented satisfaction levels of 62.5%, 39%, and 21.9%, respectively.[19-21]

Coworkers, control, responsibility, praise, and recognition all had high median scores; however, work-family balance and extrinsic career opportunities exhibited lower ratings and greater variability. This observation raises critical questions regarding the ecological policy implications of the community health officer role in India, underscoring the absence of affordable career advancement pathways. A study by Helbing et al (2017) found that job satisfaction decreases in correlation with unfavorable working conditions, organizational policies, and interpersonal work relationships, particularly as tenure in nursing and experience in emergency department nursing increase.[22]

The significant influence of induction training on skill performance, which was supported by findings from a study done in the state of North India, which reported that modular induction training substantially enhanced mean knowledge levels, and another study by Boopalan et al (2025) also showed similar results. The limitations of the study are that it is based on a small sample size, and the study was done in one district.[23,24]

CONCLUSION

The study revealed that most of the CHOs had an average level of skill performance in the management of selected non-communicable diseases. Their skill performance was better in managing patients than in taking patient history and conducting examinations. Induction training played an important role in skill performance. This implies that if systematic Induction training is given to newly recruited CHOs, the quality of services will be better. Job satisfaction of CHOs was found to be moderate. Their median value was higher in the interpersonal and supervisory scales, but lower in extrinsic reward, professional growth, and work-family balance scales. Therefore, if more emphasis is given to career progression, distribution of workload, and maintenance of employees, the job satisfaction of CHOs will be better.

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