

## AN ASSESSMENT OF JOB SATISFACTION AMONG HEALTH WORKERS IN PRIMARY HEALTHCARE CENTRES, BORNO, NIGERIA

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### ABSTRACT

**Background:** The benefits of job satisfaction as well as an understanding of factors that influence job satisfaction are important for the optimal functioning of the health system.

**Objective:** This study aimed to assess job satisfaction among health workers in primary healthcare centres in Maiduguri/Jere Local Government Areas of Borno State.

**Methods:** This was a descriptive cross-sectional study using a semi-structured interviewer-administered questionnaire. Respondents were selected using a two-stage sampling technique. The data collected was analyzed using Statistical Product and Services Solutions version 26. Bivariate analysis was performed to identify sociodemographic characteristics associated with job satisfaction. Statistical significance was set at p-value <0.05.

**Results:** The mean age of the respondents was 33.3 years with 70.4% being females. Major motivators of job satisfaction were making a difference in other people's lives (87.8%), while dissatisfaction was salaries and allowances. Factors with the highest workplace satisfaction included the work activities of the respondents being meaningful to them (90.4%) and satisfaction with overall communication in the workplace (89.2%). Satisfaction with career development wasla being accounted for by confidence in one's abilities to do well at work (87.4%) and opportunities to utilize one's skills (73.0%). There was no statistically significant association between job satisfaction and gender (p=0.538), age (p=0.183) as well as marital status (p=0.401).

**Conclusion:** This study showed worker benefit as the major contributor to dissatisfaction among workers. There is, therefore, a need for government to improve the monetary and non-monetary benefits of health workers. In addition to improving their working environment to ensure job satisfaction with its associated benefits to work.

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**Keywords:** *Job satisfaction, Health Workers, Primary Health Care*

## INTRODUCTION

Job satisfaction has been a critical focus of research in the medical field due to its direct correlation with employee productivity and organizational performance (1-3). In the health sector, job satisfaction is particularly crucial as it significantly impacts the quality of care provided, thereby influencing morbidity and mortality outcomes (4). Satisfied healthcare workers are more likely to deliver high-quality care, contributing to improved patient outcomes. Factors influencing job satisfaction include satisfaction with pay, promotion opportunities, fringe benefits, job security, and relationships with co-workers and supervisors (5). Conversely, job dissatisfaction can lead to decreased productivity, increased absenteeism, worker burnout, job migration, and a diminished sense of well-being (6,7). Job satisfaction is therefore a vital component of human resource management, linked with organizational performance, quality care, and employee retention. It reflects individuals' feelings about their jobs, including the extent to which they like or dislike various job aspects (8,9). A prominent theory explaining the dynamics of job satisfaction is the Herzberg's two-factor theory (Motivator-Hygiene theory), which differentiates between factors that create job satisfaction (motivators) and those that lead to dissatisfaction if not adequately addressed (hygiene factors). Motivating factors include sense of achievement and responsibility, aim to inspire and engage employees, while hygiene factors, such as salary and working conditions are necessary for employees to maintain satisfaction in the workplace(10).

In Nigeria, the healthcare sector faces significant challenges, particularly a critical shortage of health professionals despite the high disease burden in the country (11). This shortage exacerbates issues related to job satisfaction, as inadequate staffing can lead to increased workload, burnout, and job dissatisfaction among healthcare workers (11,12,13). The sector has also been affected by the massive emigration of health workers and historically persistent labor crises, driven by diverse agitations from various interest

groups and a lack of government commitment to resolving these issues. The Nigerian Primary Health Care (PHC) system is designed to provide comprehensive, accessible, community-based care, including preventive, curative, and rehabilitative services (14,15). However, despite its critical role, the PHC system in Nigeria is often under-resourced and understaffed, hampering its effectiveness (16). Primary Healthcare centers, the first point of contact for most individuals seeking healthcare, face numerous challenges, including poor working conditions, inadequate space, poor ventilation, erratic power supply, and insufficient technical staff. These conditions further impact job satisfaction, making it imperative to address these issues to improve healthcare delivery and outcomes.

The existing body of research has delved into the diverse range of factors that shape job satisfaction among healthcare professionals, encompassing both the Nigerian context as well as other countries (12,17,). These studies have identified a wide array of elements that contribute to or detract from job satisfaction, including compensation, work environment, workload, autonomy, and professional development opportunities (13,17). In PHC settings specifically, Amoran et al. (18) examined factors that enhanced job satisfaction among PHC workers. The findings indicated that age, marital and years of service were major enhancers of satisfaction. Although the research reported an overall low satisfaction level, especially with regards to financial incentives, which was cited in similar research among PHC nurses in Ekiti by Ayamolowo et al (3). He noted that work environment quality strongly correlated with job satisfaction with factors like modern equipment and prompt payment of salary being crucial. Ezemenahi et al. (19) reported high levels of satisfaction in Anambra with salaries, payment of allowances, physical working environment, distance to workplace as factors influencing job satisfaction. Similarly, Kadiri-Eneh et al (20) in Rivers reported high levels although factors implicated were work relationships and work activities. These studies complex interplay of both extrinsic and intrinsic factors in job satisfaction.

The northeast region of Nigeria has been particularly affected by the insurgency of Non state armed groups, leading to widespread displacement, destruction of health infrastructure, and disruption of health services (21). Health care workers in these regions face unique challenges, including security threats, inadequate resources, and a high burden of disease. These conditions significantly impact the job satisfaction of health care workers, which in turn affects their performance and the quality of care provided (22).

While several studies have examined job satisfaction and the factors responsible for it among healthcare workers in Nigeria, however there is limited empirical research conducted among PHC workers in Borno state. This study, therefore, aimed to assess job satisfaction among health workers in Primary Healthcare Centres in Maiduguri/Jere Local Government Areas (LGAs) of Borno State.

## **METHODOLOGY**

### **Study area**

This study was carried out in Maiduguri and Jere Local Government Areas of Borno State. Borno State is one of the 36 States of Nigeria, located in the north-eastern part of the country. It is bordered by Adamawa, Gombe and Yobe States to the south, southwest and west respectively. It also shares borders with the republics of Niger, Chad and Cameroun to the north, north-east and east respectively (23). Its capital is Maiduguri. The state has 27 LGAs grouped into 3 senatorial districts, Borno North, Borno South and Borno Central. Jere and Maiduguri Metropolitan Council (MMC) form the state capital and they have areas of 137 km<sup>2</sup> and 900 km<sup>2</sup> respectively. They have populations of 306,400 and 791,200 respectively (24).

### **Study Population**

Healthcare workers in the various PHCs in MMC and Jere LGAs constituted the study population. There are 13 and 15 functioning PHCs with 213 and 211 healthcare workers in Maiduguri MMC and Jere LGAs respectively. These included doctors, nurses, midwives, community health workers, senior community health extension workers, (SCHEWs) junior community health extension workers (JCHEW), environmental health assistants, environmental health technicians, environmental health officers (EHO), pharmacists, pharmacy assistants, pharmacy technicians and medical laboratory technicians. Those included in the study were permanent Staff of the PHC; Staff involved in providing some clinical care to the patients. While those excluded were staff who declined consent and those that were not on duty at time of the visit.

### **Study Design**

The study used a descriptive cross-sectional study design carried out among healthcare workers in MMC and Jere LGAs

### **Sample size estimation**

The sample size was determined, using the Cochran formula  $n = \frac{Z^2 pq}{d^2}$  (25) to be 400 with a margin of error of 5% and a prevalence rate of

50%. After correction for finite population of less than 10,000 using  $N' = N/[1+n/N]$ . A sample size of 206 was gotten. Thereafter, 10% was added to the calculated sample size to allow for non-response, the sample size came to 232.

### **Sampling Technique**

A two-stage sampling technique was used to select 7 PHCs. Three in MMC and 4 in Jere LGA respectively. They were selected via simple random sampling by balloting in the first stage. In the second stage the health care workers were stratified by cadre. There after a convenience sample was taken of different cadre of workers available at the PHC centres selected till the sample size was reached.

### **Data Collection**

A total of 232 adopted, pretested, semi-structured questionnaires were administered to the participants. It was collected over a 10-week period from February to April. Data collected included information on socio-demographic factors, worker benefits, working environment and career development.

### **Data Analysis**

The data was analyzed using Statistical Package for the Social Sciences (SPSS) version 23. The overall satisfaction rate was evaluated by responses to the questions which included all the different components of the respondents' work life, work benefits and career development, and relationship with co-workers, among others. Sections on worker benefits, working environment and career development had a 5-point Likert score ranging from very satisfied with a score of 5 to very dissatisfied with a score of 1. For each section, the total score was divided by the total number of questions and the result obtained. A score of 3 was taken to be neutral, less than 3 implied the worker was dissatisfied while greater than 3 implied the worker was satisfied.

### **Ethical Approval**

Ethical approval was obtained from the Ethical committee of the University of Maiduguri Teaching Hospital. Before the interviews, the In-charges of the PHCs were asked for verbal consent before interviews were conducted in the facilities. The objectives of the study were clearly explained to the participants and written informed consent was obtained from each participant. Confidentiality and anonymity were ensured throughout the

study. Participants were not required to disclose any identifiable information on the questionnaire. Also, the interviews were carried out in consulting rooms that were not being utilized, out of ear shot of other health workers.

## RESULTS

Out of the 232 completed questionnaires only 230 were valid, giving a response rate of 99%. Table 1 shows the socio-demographic characteristics of the respondents. About 70.4% of the respondents were females and most of the workers 94 (40.9%) were within the age range of 20-29 years and the mean age of the respondents was  $33.3 \pm 9.3$  years. Majority of the workers 143 (62.2%) were married, 119 (51.7%) had a diploma as their highest educational status with 10 (4.3%) and 36 (15.7%) having higher national diplomas (HND) and degrees respectively. Occupations with the highest number of respondents were Environmental health officers (EHO) 37 (16.1%) and senior community Health Extension Workers (SCHEW) 38 (16.5%) while those with the lowest were doctors 5 (2.1%) and pharmacy technicians 15 (6.5%).

Table 2 shows the satisfaction levels of primary healthcare workers in MMC/Jere LGAs with various work benefits. Satisfaction with salary was low, with only 38.3% of workers (9.6% very satisfied and 28.7% satisfied), while 47.4% were either dissatisfied or very dissatisfied. Allowances followed a similar trend, with a significant 65.6% of workers expressing dissatisfaction (40.4% dissatisfied, 25.2% very dissatisfied). Satisfaction with salary increases was also notably low, as 69.1% of the respondents were either dissatisfied or very dissatisfied. Job security had higher satisfaction levels, with 10% of workers very satisfied and 43.5% satisfied, although 30.4% were dissatisfied. Making a difference in other people's lives was a highly satisfying factor, with 87.8% of workers being either very satisfied or satisfied. On the other hand, promotion opportunities received low satisfaction ratings, with 51.7% dissatisfied or very dissatisfied, and only 28.6% reporting any level of satisfaction. When it came to comparative earnings, 52.2% of the workers felt they were making good money compared to others in the field, although 32.2% felt dissatisfied with their earnings. Table 3 highlights the satisfaction levels with working conditions among the healthcare workers. Many workers reported satisfaction with the physical environment, with 84.3% satisfied with the lighting and ventilation, and 83.1% satisfied with the neatness of the surroundings. Similarly, 73.4% were satisfied with the availability of necessary tools and equipment.

Personal protective devices were available to the satisfaction of 74.8% of the workers, while 63.4% felt valued by their agency. Notably, 90.4% of respondents found their work activities personally meaningful, and were satisfied with the support received from their supervisors. Also high was the feeling of care from the supervisors 75.2%. Satisfaction with overall communication in the workplace was high, with 89.2% of respondents expressing satisfaction. However, Staff welfare was another area of concern, as a total of 59.6% of respondents expressing dissatisfaction 34.8% of respondents were dissatisfied and 24.8% very dissatisfied. The findings in Table 4 shows that opportunities for professional advancement received moderate satisfaction levels, with 63.1% of workers being satisfied. Support for additional training and education was also favorable, with 58.3% expressing satisfaction. Majority, 73% of the workers were satisfied with the opportunities to utilize their skills. Confidence in their abilities to perform well was high among the workers, with 87.4% reporting satisfaction.

The relationship between socio-demographic characteristics and job satisfaction is shown in Table 5. Gender did not show a significant difference in job satisfaction, with males and females reporting similar satisfaction levels ( $p = 0.538$ ). The respondents in different age groups also showed no significant difference in satisfaction levels ( $p = 0.183$ ). However, it was observed that younger workers (20-29 years) reported higher satisfaction compared to older age groups. Marital status did not significantly affect job satisfaction ( $p = 0.401$ ). Single and married workers reported similar levels of satisfaction, while divorced and widowed workers showed slightly varied satisfaction levels.

## **DISCUSSION**

This study investigated job satisfaction among primary healthcare workers in the MMC and Jere LGAs of Borno State, focusing on the three main domains of work benefits, working conditions, and career development. Health workers in this study were found to be most satisfied with working conditions, especially the physical environment and communications between co-workers and supervisory support. They were least satisfied with work benefits, particularly salaries and allowances. The study found that many Primary Health Care (PHC) workers were unhappy with their monetary benefits, including salaries, allowances, and salary increments. This dissatisfaction is consistent with findings from similar studies by Kadiri-Eneh et al. (20), Campbell and Ebuehi (26), and Martins et al. (27), where primary health workers also reported being dissatisfied with their

financial remuneration. However, a study by Kolo (28) found that health workers were satisfied with their monetary benefits. This discrepancy can be explained by the fact that Kolo's study was conducted in a tertiary center, where health workers often receive better salaries and benefits due to their specialized roles.

There are significant differences in compensation schemes between doctors and other health workers, as well as between federal and state government employees. The federal government pays the salaries of workers in tertiary centers, while state and local governments are responsible for paying health workers in general hospitals and PHCs respectively. These compensation arrangements vary between states and depend on how well the Primary Health Care Under One Roof (PHCUOR) initiative is implemented (29).

These findings underscore that compensation is a major determinant of job satisfaction in the healthcare sector. According to Liu et al. (22), workers' remuneration is a strong factor in job satisfaction, helping to reduce attrition and serving as a positive incentive for workers to remain in certain organizations or locations. The discrepancies in satisfaction between primary and tertiary healthcare settings further reinforces the importance of addressing compensation disparities to improve job satisfaction across all levels of the healthcare system. Efforts to harmonize salary schemes and ensure equitable remuneration for all health workers, regardless of their level of government employment, are essential to enhance job satisfaction and retention in the healthcare sector. The findings from the study indicate that despite dissatisfaction with hygiene factors (monetary benefits such as salaries, allowances, and salary increments), healthcare workers were very satisfied with the intrinsic motivators of their work. Making a difference in people's lives, feeling that their work is a "selfless and privileged service to humanity,"(28) and professional development opportunities are strong motivators that contribute significantly to their job satisfaction. (30)

This implies that while improving hygiene factors like compensation and working conditions is crucial to prevent dissatisfaction, focusing on enhancing motivators such as meaningful work, professional growth, and the sense of contribution to society is essential for achieving high levels of job satisfaction and retention among healthcare workers. Enough emphasis therefore cannot be placed on the importance of intrinsic factors in motivating health workers, contrary to the public opinion that they are only



driven by financial gains. This suggests that healthcare organizations should invest in both adequately. The workplace domain had the highest satisfaction scores, particularly regarding factors associated with the physical environment and relationships with co-workers. This finding aligns with studies by Chirdan et al. (31) and Martins et al. (27), who observed that workers in this region viewed their workplaces as inspiring. Kadiri-Eneh et al. (20) also found that PHC workers in Rivers were satisfied with their relationships with their co-workers. Similarly, Ezemenahi et al. (19), and Campbel and Ebuehi (26), reported these findings.

In contrast, Ayamolowo et al. (3) found that nurses at the PHC level were dissatisfied with their work environment and had average satisfaction levels. This discrepancy can be attributed to the fact that they surveyed only nurses at the PHC level which limited the generalizability of the study, our study included all PHC workers, providing a more comprehensive perspective. In this study, high levels of managerial support were reported by the healthcare workers. Such levels of support for work activities were also cited by other researchers, including Ayamolowo et al. (3), Campbell and Ebuehi (26), and Chirdan et al (31). Meanwhile, Ogbuabor et al. (32) reported low satisfaction with supervision among PHC workers, likely due to conflicts arising from the posting of doctors as medical officers of health to the LGAs, where the primary health care structure was previously managed by lower cadres of health workers. The findings from this study imply that achieving job satisfaction among health workers requires a careful balance of both hygiene factors and motivators to achieve optimal health outcomes with a satisfied staff.

Career development is a key contributor to worker satisfaction, encompassing opportunities for additional training and the utilization of individual skills. Our results show that PHC workers were satisfied with all components of this domain, particularly their confidence in their ability to use their skills and perform well at work. This aligns with findings from Campbell and Ebuehi (26). However, in Rivers (20), PHC workers reported dissatisfaction with their ability to use their skills probably because of restrictions in their job descriptions. These workers have learnt more skills than they were trained for, due to a shortage of human resources for health, especially at the PHC levels. This had lead to lower cadres of workers, aside from doctors, learning necessary skills to save lives at that level. This highlights the need to task shift and share some functions, which can be performed by unspecialized workers who can be trained to perform

them. While allowing specialized workers to handle critical or complicated cases.

Although workers in this study were only marginally satisfied with support for additional training and education, Ayamolowo et al. (3) found that PHC nurses in Ekiti were dissatisfied with educational and career advancement opportunities. Similar findings were reported in other studies (27,31). Professional development is crucial for retention and professionalism in the health workforce. Addressing factors that decrease health workers' intention to leave is vital in formulating effective retention strategies.

Our study revealed that there was no statistically significant relationship between age, gender, and marital status and job satisfaction. Although our study revealed a high proportion of females, younger and widowed health workers were satisfied with their work. These findings are consistent with studies by Ayamolowo et al (3), Amoran et al. (18), and Ezemenahi et al. (19). Although Ezemenahi noted higher satisfaction levels among females and younger health workers, his study focused on nurses, a profession with a high proportion of females. Amoran et al. (18), in a more gender-balanced study among various cadres of PHC workers, noted similar findings. These researchers also observed higher satisfaction levels among separated or divorced, and single workers compared to married workers. In contrast, a study in a Nigerian federal health institution (33) found that marital status significantly influenced job satisfaction, with singles reporting higher levels of job stress compared to their married counterparts. This may be because married couples are more likely to support each other psychologically and economically, which can ultimately improve job satisfaction.

**CONCLUSION:** Our study assessed the job satisfaction of PHC workers in Borno state, we found high satisfaction levels with working condition of workers, while working benefit has poor satisfaction levels. State and LGAs should implement strategies to maintain the work environment and improve financial and non-financial benefits of PHC workers

## REFERENCES

1. Platis, P. Reklitis, S. Zimeras, Relation between Job Satisfaction and Job Performance in Healthcare Services, *Procedia - Social and Behavioral Sciences*, Volume 175;2015,Pages 480-487,ISSN1877-0428,<https://doi.org/10.1016/j.sbspro.2015.01.1226>.

- (<https://www.sciencedirect.com/science/article/pii/S1877042815012860>)
2. Gholizade L, Masoudi I, Maleki MR, Aeenparast A, Barzegar M. The relationship between job satisfaction, job motivation, and organizational commitment in the healthcare workers: A structural equation modeling study. *International Journal of Hospital Research*. 2014 Sep 1;3(3):139-44.
  3. Ayamolowo SJ. Job satisfaction and work environment of primary health care nurses in Ekiti state, Nigeria: an exploratory study. *International journal of caring sciences*. 2013 Sep 1;6(3):531.
  4. Lundstrom T, Pugliese G, Bartley J, Cox J, Guither C. Organizational and environmental factors that affect worker health and safety and patient outcomes. *American journal of infection control*. 2002 Apr 1;30(2):93-106..
  5. Nemmaniwar A, Deshpande MS. Job satisfaction among hospital employees: a review of literature. *IOSR J Bus Manag*. 2016;18(6):27-31.
  6. Shinde M. Occupational stress and job satisfaction among nurses. *International Journal of Science and Research (IJSR)*. 2014 Apr;3(4):733-40.
  7. dissatisfaction of professional nurses in primary health care facilities in the Free State Province of South Africa. *Africa Journal of Nursing and Midwifery*. 2009 Jan 1;11(1):104-17.
  8. Yami A, Hamza L, Hassen A, Jira C, Sudhakar M. Job satisfaction and its determinants among health workers in Jimma university specialized hospital, Southwest Ethiopia. *Ethiop J Health Sci*. 2011 2(11):19–27.
  9. Spector PE. *Job satisfaction: Application, assessment, causes, and consequences*. Sage; 1997 Mar 26. Singh JK, Jain M. A study of employees' job satisfaction and its impact on their performance. *Journal of Indian research*. 2013 Oct;1(4).
  10. Herzberg FI. *Work and the Nature of Man*. 1966
  11. Ezeja EB, Azodo CC, Ehizele AO, Ehigiator O, Oboro HO. Assessment of job satisfaction and working conditions of Nigerian oral health workers. *Int. J. Biomed. & Hlth. Sci*. 2010; 6(3):143-15
  12. Akinwale OE, George OJ. Work environment and job satisfaction among nurses in government tertiary hospitals in Nigeria. *Rajagiri Management Journal*. 2020 Jun 29;14(1):71-92.
  13. Bhatnagar A. *Determinants of motivation and job satisfaction among primary health workers: case studies from Nigeria and India (Doctoral dissertation, Johns Hopkins University)*.

14. Irabor PO, Ebirim SI, Aloba IF. Local Government and Primary Health Care service delivery in South-Western Nigeria 2010–2015. *Acta Politica Polonica*. 2022;54:115-33.
15. Effiong FB, Ogbonna CP, Agughalam PI, Okwukwu MO, Dike IC, Elebesunu EE, Uwishema O. The role of community-based approaches in achieving universal health coverage: addressing the Nigerian narrative. *Annals of Medicine and Surgery*. 2023 May 1;85(5):1769-73.
16. Willis-Shattuck M, Bidwell P, Thomas S, Wyness L, Blaauw, Ditlopo. Motivation and retention of health workers in developing countries: a systematic review. *BMC Health Serv Res*. 2008;(4):247
17. Tenaw Z, Siyoum M, Tsegaye B, Werba TB, Bitew ZW. Health professionals job satisfaction and associated factors in Ethiopia: a systematic review and meta-analysis. *Health services research and managerial epidemiology*. 2021 Nov;8:23333928211046484.
18. Amoran OE, Omokhodion FO, Dairo MD, Adebayo AO. Job satisfaction among Primary health care workers in three select local government areas in south west Nigeria. *Nigerian Journal of Medicine*. 2005; Vol 14:No2,
19. Ezemenahi SI, Modebe AI, Ekebelu CC, Ezemenahi SC, Obi-Nwosu AL, Ezemenahi BE, Uzoma GI, Okereke UC. Assessing the job satisfaction of health workers in primary health centers in Anaocha, Anambra State in Nigeria. *West African Journal on Sustainable Development*. 2024 Jan 1;1(1):40-58.
20. Kadiri-Eneh NP, Uzochukwu BS, Tobin-West C, Azuike EC. An assessment of job satisfaction among primary health care workers in Rivers State, Nigeria. *Nigerian Journal of Medicine*. 2018 Jul 1;27(3):282-91.
21. Mudasiru SO, Oladipupo OB, Fatai AS. Conflicts and insurgency: Barriers to global quality health service for internally displaced persons in the North Eastern Part of Nigeria. *African Journal of Political Science and International Relations*. 2019 May 31;13(4):40-52.
22. Lu H, Zhao Y, While A. Job satisfaction among hospital nurses: A literature review. *International journal of nursing studies*. 2019 Jun 1; 94:21-31.
23. Borno State. About Borno [Internet]. About Borno State. 2021 [cited 2021 Jun 19]. p. 1–8. Available from: <https://bornostate.gov.ng/about-borno/>.

24. Borno State, Nigeria-Population Statistics, Charts, Maps and Locations. Available <http://www.citypopulation.de/en/Nigeria/admin/NGS008-orno/>
25. Woolson RF, Bean JA, Rojas PB. Sample size for case-control studies using Cochran's statistic. *Biometrics*. 1986 Dec 1:927-32.
26. Campbell Pc, Ebuehi OM. Job Satisfaction: Rural Versus Urban Primary Health Care Workers' Perception in Ogun State of Nigeria. *West African Journal of Medicine*. 2011;Vol30(6):408-412
27. Martins OF, Tukur D, Danburam A, Salawau F. Job satisfaction among doctors and nurses: a case study of federal medical centre Yola, Nigeria. *International Journal of Community Med Public Health* 2016;3(6):1640-1647.<http://www.ijcmph.com>. DOI:<http://dx.doi.org/10.18203/2394-6040.ijcmph20161643>
28. Kolo ES. Job satisfaction among healthcare workers in a tertiary center in Kano, Northwestern Nigeria. *Niger J Basic Clin Sci [serial online]* 2018 [cited 2021 Aug 27];15:87-91. Available from: <https://www.njbcsc.net/text.asp?2018/15/1/87/228364>
29. Ihebuzor N, Tilley-Gyado R, Martufi V, Ajuluchukwu M, Olubajo O, Banigbe B, Fadeyibi O, Abdullhai R, Muhammad AJ. Putting Institutions at the Centre of Primary Health Care Reforms: Experience from Implementation in Three States in Nigeria.
30. Butawa NN, Sule AG, Omole VN, Yere JK, Dogo M, Gyuro J, Assessment of Job satisfaction among Health workers in a tertiary hospital in Zaria, Northern Nigeria. *Savannah J Med Res Pract* 2013;2
31. Chirdan O, Akosu J, Ejembi C, Bassi A, Zoakah A. Perceptions of working conditions amongst health workers in state-owned facilities in northeastern Nigeria. *Ann Afr Med*. 2009;8(4):243-9.
32. Ogbubor DU, Okoronkwo I, Uzochukwu B, Onwujekwe O. Determinants of Job satisfaction and retention of public sector health workers in southwest Nigeria. *Int. J. Med. Health Dev*. 2006 ;Vol 21(2):27-39
33. Olatunji S, Mokuolu B. The Influence of Sex, Marital Status, and Tenure of Service on Job Stress, and Job Satisfaction of Health Workers in a Nigerian Federal Health Institution. *African Res Rev*. 2014;8(1):126.

**TABLES**

**Table 1: Socio-demographic characteristics of the healthcare workers of the primary healthcare centres in MMC/Jere LGA**

<b>Variables</b>	<b>Frequency (n=230)</b>	<b>Percentage (%)</b>
<b>Gender</b>		
Male	68	29.6
Female	162	70.4
<b>Total</b>	<b>230</b>	<b>100.0</b>
<b>Age (years)</b>		
20 – 29	94	40.9
30 – 39	86	37.4
40 – 49	33	14.3
50 and above	17	7.4
<b>Total</b>	<b>230</b>	<b>100.0</b>
<b>Marital Status</b>		
Single	72	31.3
Married	143	62.2
Divorced	6	2.6
Widowed	9	3.9
<b>Total</b>	<b>230</b>	<b>100.0</b>
<b>Educational qualification</b>		
SSCE	22	9.6
Certificate	41	17.8
Diploma	119	51.7
HND	10	4.3
Degree	36	15.7
Others	2	0.9
<b>Total</b>	<b>230</b>	<b>100.0</b>
<b>Occupation</b>		

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Medical Doctor	5	2.1
Pharmacy Technician	15	6.5
Nurse	23	10.0
Midwife	19	8.3
Nurse-midwife	18	7.8
Medical laboratory Officer	22	9.6
CHO	28	11.8
JCHEW	25	10.9
SCHEW	38	16.5
EHO	37	16.1
<b>Total</b>	<b>230</b>	<b>100.0</b>

Key: SSCE – Senior School Certificate Examination; CHO– Community Health Officer, CHEW-Community Health Extension Worker, EHO- Environmental health officer

**Table 2: Satisfaction of primary healthcare workers in MMC/Jere LGAs with the work benefits**

<b>Satisfaction factors</b>	<b>Very satisfied</b>	<b>Satisfied</b>	<b>Neutral</b>	<b>Dissatisfied</b>	<b>Very dissatisfied</b>
Salary	22(9.6%)	66(28.7%)	33(14.3%)	69(30.0%)	40(17.4%)
Allowances	8(3.5%)	41(17.8%)	30(13.0%)	93(40.4%)	58(25.2%)
Salary increase	9(3.9%)	28(12.2%)	34(14.8%)	101(43.9%)	58(25.2%)
Job Security	23(10.0%)	100(43.5%)	37(16.1%)	50(21.7%)	20(8.7%)
Promotion	10(4.3%)	56(24.3%)	45(19.6%)	87(37.8%)	32(13.9%)
Making a difference in other people's lives	75(32.6%)	127(55.2%)	12(5.2%)	12(5.2%)	4(1.7%)
Making pretty good money compared to others in this field	29(12.6%)	91(39.6%)	36(15.7%)	45(19.6%)	29(12.6%)

**Table 3: Satisfaction of primary healthcare workers in MMC/Jere LGAs with the working conditions**

<b>Satisfaction factors</b>	<b>Very satisfied</b>	<b>Satisfied</b>	<b>Neutral</b>	<b>Dissatisfied</b>	<b>Very dissatisfied</b>
Good lighting and ventilation	72(31.3%)	122(53.0%)	12(5.2%)	12(5.2%)	12(5.2%)
Neatness of the surroundings	57(24.8%)	134(58.3%)	20(8.7%)	7(3.0%)	12(5.2%)
Necessary tools and equipment	56(24.3%)	113(49.1%)	31(13.5%)	18(7.8%)	12(5.2%)
Availability of personal protective devices	62(27.0%)	110(47.8%)	24(10.4%)	18(7.8%)	16(7.0%)
Feeling of being valued by the agency	44(19.1%)	102(44.3%)	50(21.7%)	26(11.3%)	8(3.5%)
My work activities are personally meaningful to me	75(32.6%)	133(57.8%)	15(6.5%)	5(2.2%)	2(0.9%)
Orientation received prepared me well for this work	80(34.8%)	121(52.6%)	15(6.5%)	10(4.3%)	4(1.7%)
This job demands too much (physically and otherwise)	46(20.0%)	111(48.3%)	29(12.6%)	36(15.7%)	8(3.5%)



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Supervisors care deeply for me and for our clients	54(23.5%)	119(51.7%)	18(7.8%)	24(10.4%)	15(6.5%)
Staff welfare	10(4.3%)	42(18.3%)	41(17.8%)	80(34.8%)	57(24.8%)
The work I do is interesting	77(33.5%)	126(54.8%)	19(8.3%)	6(2.6%)	2(0.9%)
Satisfaction with overall communication in workplace	71(30.9%)	134(58.3%)	17(7.4%)	7(3.0%)	1(0.4%)
Adequate support from supervisors	56(24.3%)	119(51.7%)	26(11.3%)	17(7.4%)	12(5.2%)

**Table 4: Satisfaction of primary healthcare workers in MMC/Jere LGAs with the career development,**

Satisfaction factors	Very satisfied	Satisfied	Neutral	Dissatisfied	Very dissatisfied
Opportunities for professional advancement.	42(18.3%)	103(44.8%)	36(15.7%)	36(15.7%)	13(5.7%)
Support for additional training and education.	34(14.8%)	100(43.5%)	30(13.0%)	51(22.2%)	15(6.5%)
Opportunities to utilize your skills.	50(21.7%)	118(51.3%)	29(12.6%)	27(11.7%)	6(2.6%)
Confidence in my abilities to do well at my work	89(38.7%)	112(48.7%)	16(7.0%)	10(4.3%)	3(1.3%)

**Table 5: Relationship between Socio-demographic Characteristics and Job Satisfaction of the workers in the primary healthcare centres in MMC/Jere LGAs,**

Variables	Total (%)	Satisfied frequency (%)	Dissatisfied frequency (%)	P- Value	Chi-Square	Level of significance
<b>Gender</b>						
Males	68(29.6)	42(62.3)	18(25.9)	0.538	0.384	N/S
Females	162(70.4)	99(61.4)	41(25.6)			
<b>Total</b>	<b>230</b>					
<b>Age group (years)</b>						
20-29	94(40.9)	56(59.8)	19(20.0)	0.183	3.791	N/S
30-39	86(37.4)	41(48.1)	26(30.6)			
40-49	33(14.3)	18(53.9)	11(32.7)			
50+	17(7.4)	9(51.9)	4(24.9)			
<b>Total</b>	<b>230</b>					
<b>Marital status</b>						
Single	72(31.3)	48(66.1)	18(24.4)	0.401	0.955	N/S
Married	143(62.2)	95(66.4)	38(26.8)			
Divorced	6(2.6)	3(55.8)	2(31.2)			
Widowed	9(3.9)	6(63.4)	2(27.4)			
<b>Total</b>	<b>230</b>					

Key: N/S - Not Significant; S – Significant

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