Available online at www.fpmjournal.org

Public Health Young Scholars Alliance

Journal homepage: www.fpmjournal.org

Frontiers in Preventive Medicine

Original Research

OPEN ACCESS

Work Environment, Career Opportunities, and Turnover Intention among Nurses in Rural Health Settings in Ghana

Sabina Ampon-Wireko[1]*, Susan Yaa Aframa Arkah[2], Abraham Donkor[3]

[1]*Faculty of Health and Allied Science, Catholic University College, Box 363, Ghana*
[2]*Sefwi Asafo College of Health- Asafo Ghana*
[3]*Ministry of Health, Ghana, Accra*

ARTICLE INFO

Article history:
Received 09 January 2026
Accepted 23 January 2026

Keywords:
Turnover intention;
Nurses;
Rural health facilities;
Ghana;
Structural equation modelling

ABSTRACT

This study investigated the correlation between financial assistance, working circumstances, career chances, personal variables, and turnover intention amongst nurses employed in health centers in rural areas in the Western North Region of Ghana. A facility-based cross-sectional study was performed including 242 nurses employed in rural health facilities in the Western North Region. Data were gathered utilizing a standardized, self-administered questionnaire. Structural equation modeling (SEM) was utilized to evaluate the associations among financial assistance, working circumstances, career opportunities, personal characteristics, and turnover intention. The average age of respondents was primarily under 40 years, with females being the majority of participation. Financial assistance had a substantial negative correlation with turnover intention ($\beta = -0.090$, $p < 0.05$), suggesting that enhanced financial incentives diminished nurses' propensity to depart. The prospect of career progression was significantly correlated with turnover intention ($\beta = 0.254$, $p < 0.001$), indicating that restricted professional growth options in rural environments heightened the probability of turnover. Positive working conditions ($\beta = -0.110$, $p < 0.001$) and individual factors ($\beta = -0.197$, $p < 0.001$) were substantially correlated with decreased turnover intention.

The intention to leave among nurses in rural Ghana is affected by financial, organizational, educational, and personal factors. Enhancing rewards and working circumstances, alongside resolving career development problems, may mitigate nurses' intentions to depart from rural positions. These findings offer empirical information to guide worker retention approaches in rural healthcare environments.

1. Background

For the majority of health systems, achieving universal access to healthcare by 2030 is a top priority. Health Care Workers (HCWs) are the foundation of healthcare institutions and are regarded as the primary determinant of the general public's access to healthcare. Health Workers (HWs) are all individuals who engage in activities that are primarily intended to improve health, according to the World Health Organization (WHO). A common and serious issue is the uneven distribution of HCWs across nations, which can cause problems like a shortage of doctors in underdeveloped regions, which could make it difficult for the general public to access healthcare services [1].

The delivery of high-quality healthcare, which has a greater impact in rural areas, has been hampered by the lack of healthcare workers in many countries [2][3]. Many health systems around the world are still struggling with a variety of human resources for health (HRH) issues, such as mismatches between the demand and supply of health workforce that are largely supported by migration, insufficient funding, and other factors [4]. This has led to poor health outcomes for the rural population, including

* *Corresponding author:* Sabina Ampon-Wireko. Email: sabina.wireko@cug.edu.gh
ISSN: 3068-9376/
http://dx.doi.org/10.64904/fpm2026.01.010

higher rates of chronic diseases, poorer mental health, and shorter life spans [5][6]. Almost all nations face difficulties due to the unequal distribution of health professionals between rural and urban areas, but low- and middle-income nations face greater difficulties.

It has been suggested that nearly 1 million additional health workers are required in Sub-Saharan Africa to achieve SDG health outcomes [7][8] These countries face an urgent need to increase their health workforce, maintain a balanced distribution of these healthcare workers, particularly to rural areas with the greatest health needs, and promote work proficiency, productivity, and satisfaction. For example, the Dakar region of Senegal, with only 23% of the country's population, has more than half (60%) of the country's physicians [9].

Despite the high levels of morbidity and mortality that have been noted from the rural areas, Ghana, like many sub-Saharan African nations, has a distribution of health personnel that is skewed towards the urban areas [10][11]. In Ghana, there is an understaffing problem in rural primary care facilities (dispensaries and health centers). High rates of maternal mortality and morbidity, infant and child mortality, and other preventable diseases are consistent with this inadequacy. The Ghana National Health Policy, as well as the Health Sector Medium Term Development Plan (HSMTDP) for the years 2018–2021 and earlier versions, are all focused on achieving Universal Health Coverage and strengthening the country's healthcare infrastructure to better address public health needs, including emergencies [12]. As a result, significant efforts have been made to improve social insurance coverage for health care, as well as to train and employ the health workforce.

The Ministry of Health (MOH) and its partners developed a staffing standard (known as staffing norms) for publicly funded healthcare facilities in Ghana as part of efforts to address HRH shortages and maldistribution within the country's health sector [13]. These efforts have led to Ghana being cited not only as a country on a good path toward universal health coverage (UHC), but also as a leading producer of physicians, nurses, and midwives in Sub-Saharan Africa [14].

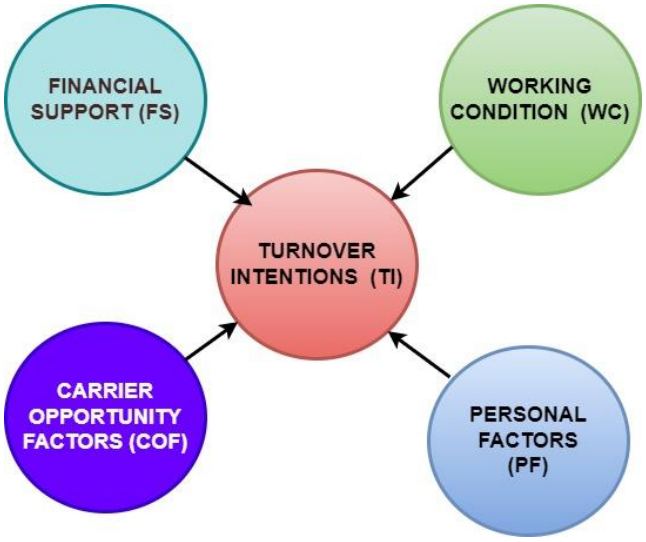

Fig. 1 - Conceptual framework of the study

Differences in health outcomes can be attributed to differences in health personnel between rural and urban populations [15]. Donor partners have assisted in the recruitment of just over 3000 nurses from 2005 to date, appointed on contracts of 2 to 3 years duration and posted to public sector facilities in underserved rural areas with high HIV prevalence [16]. Although the Ministry of Health in Ghana acknowledges the elements that different researchers have suggested might have an impact on rural practice, some of the current problems may vary from one region to another even within a single country. A quantitative study will be conducted in the western north district to evaluate the factors influencing the acceptance of rural postings in order to understand the contextual issues that affect rural practice in Ghana.

It has been reported internationally [17] that the absence of better living conditions or social amenities, such as good schools with qualified teachers for children, good accessible roads and transportation systems, electricity, and potable water, are barriers to the retention of health workers, particularly among health workers, in remote areas. In addition, little is known about the causes of the rising turnover intentions among health professionals. Therefore, this study aims to assess the role of financial support, working condition, carrier opportunity and personal factors on turn over intention among nurses working in the rural and underdeveloped areas in the western north municapality to develop evidence-informed policy interventions.

2. Methods

2.1. Reasearch study design

This study followed the STROBE recommendations and was descriptive and cross-sectional. Data were gathered from newly hired nurses working in rural facilities (Juaboso Government hospital, Sefwi Wiawso Government Hospital, SDA Asawinso Clinic, Asawinso Health Centre, Bodi Health Centre, Anyinabrim CHPS Compound, Punikrom CHIP Compound) in the Western North region. The facilities were purposefully chosen due to the accessibility, rural characteristics, and availability of concluded agreements.

Data were gathered via a structured, self-administered questionnaire modified from previously validated tools. The questionnaire was created to gather socio-demographic data and essential study factors concerning turnover intention among nurses employed in rural health facilities. All scale items were assessed utilizing a seven-point Likert scale, with 1 representing 'never' and 7 denoting 'always,' unless stated otherwise. The instrument was pretested to verify clarity, reliability, and validity, exhibiting satisfactory internal consistency across all constructs.

The data collection exercise took place from September to October 2025. Ten field assistants were then trained, data collection tools were tested, and the questionnaire was revised in response to field issues. The entire research was conducted in accordance with national ethical standards and laws. Face validity evaluation and pilot testing were carried out at the Sefwi Dwenase and Wiawso health facilities with 50 freshly recruited nurses who were subsequently eliminated from the final survey before data collection. The pilot study allowed the researchers to evaluate the extent to which the questionnaire items correctly reflected the desired constructs. The content validity of the scales used for this study was assessed by two professors whose research area is health policy. Through Cronbach alphas, the piloted instruments' dependability was determined. The reliability of the combined Cronbach alpha for financial support, career and professional factors, working conditions factors, turnover intention and personal factors were 0.78, 0.75, 0.81, 0.79 and 0.89 respectively. The results from the pilot testing of the measurement items were also convincing; hence, the necessary steps to ensure that the final questionnaires reached the targeted population were followed.

2.2. Inclusion and Exclusion criteria

Eligible participants for the study included nurses and midwives who were engaged in rural health facilities in the Western North Region of Ghana. Eligible participants had to be full-time employees of the Health Service of Ghana or faith-based health facilities and must have been employed at their current facility for at least six months, so assuring sufficient familiarity with the work environment and organizational circumstances under evaluation. Only persons present throughout the data collection window and who provided informed written permission were included in the study.

Nurses had been excluded from the research if they were students, national service members, probationary staff, or had been employed at their present facility for a shorter period of time. Workers on study leave, yearly leave, or engaged in long-term training during the data collecting period were excluded. Furthermore, administrative personnel without direct care-giving duties and nurses who either refused or retracted consent were excluded from the study.

2.3. Sampling technique

The sample size for the study was determined using **Yamane's (1967) formula**, which is given as:

$$n = \frac{\mathrm{N}}{1 + \mathrm{N}\,(\mathrm{e})^2}$$

Where: n = required sample size, N = total population size, e = margin of error (precision level), usually **0.05** for 95% confidence. The total number of eligible nurses in the selected rural health facilities was 600. A margin of error of **5% (0.05)** was used e=0.05

By Substituing the values into Yamane's formula

$$n = \frac{600}{1 + 600\,(0.05)^2} = 240$$

A non-respondent adjustment of roughly 1% was incorporated to address potential non-response making a tototal of 242.

2.4. Participant

A Asimple random sampling technique was used to select helath workers working in the rural areas in the western north region. The study used a sample size of two hundred and fourty two (242) for this study. Before study commencement, exhaustive health professionals engagement and discussion activities were done to help the study be welcomed in the facility. A consent form which include 'My participation is completely voluntary and I understand that I may withdraw at any time and that any individual information that is provided by any participant in this study will not be provided to any other body. I understand that the data from the entire sample may be published in an international peer review journal, but no individual person will be identified' was given to participants to sign and to assure them of confidentiality before the data was collected.

In each health facility, the repondents we chosen at random from the first to the third on the list.

After the various hospital authorities had approved. Of the 242 nurses who were conveniently recruited for the survey, a total of 219 responses were received, representing 94.3% of the response rate.

2.5. Measurement items

The turnover intention was measured with three items adopted from the work of Singh et al., (1996). This scale has been proven to be valid and reliable since it has been widely used in research to measure turnover intention. The Cronbach's alpha of the original scale was 0.89, showing good internal consistency reliability. Items were also measured on a seven-point Likert scale ranging from "1 =never" to "7 = always." This turnover intention scale's total score ranged from 1–21, and a high score suggested a higher degree of turnover intention.

Financial support was measured using five items from Getzin, Bobot [18] study. This assessment evaluated nurses' attitudes of financial incentives and economic advantages linked to their rural assignments, encompassing allowances and monetary assistance. Elevated scores indicated more positive attitudes of financial assistance.

For Career and professional factors, six items from Nasiripour, Maleki [19] study were employed in this study. Working conditions factors was measured with five items. This encompassed opinions regarding professional development opportunities, availability of training, promotion potential, and career advancement in rural health environments. Elevated scores signified enhanced perceived job prospects.

Working conditions (WKC) were evaluated by five questions that assessed the physical and organizational aspects of the work environment. These encompassed the availability of required equipment, appropriateness of infrastructure, task safety, and overall workplace support. Elevated ratings indicated more advantageous working conditions.

Personal factor was measured with 6 items [20]. Personal variables were assessed using six measures derived from prior research on health professional retention in rural settings. This concept included individual-level attributes such as motivation, personal values, familial obligations, and personal situations that may affect decisions to stay in or depart from rural assignments. Elevated ratings signified more favorable personal conditions for retention.

2.6. Control variables

Marital status, employment status and salary have been suggested to have a significant influence on health workers' turnover intention. Therefore, this current study employed the above three demographic characteristics variables as control variables in the structural effect model.

All the respondents willingly participated in this study and were informed about the aim of the study. They were also assured of optimum anonymity and confidentiality of their responses. The respondents were made aware that their responses were for only academic exercise.

2.7. Data analysis

An essential component of the research study is the appropriate methodological choice, according to Davis (1996) and Stevens (2002). The study employed a second-generation multivariate structural equation modelling approach to assess the relationship between the study variables. The SEM, unlike the other statistical methods assisted in determining validity and reliability of the model metrics. Preliminary analysis was performed using SPSS v. 26.0 and the analysis of a moment structures (AMOS) Version 26 was used for testing the hypothesized relationships. The study used a two-stage technique [21][22] to estimate the hypotheses. First, we conducted a confirmatory factor analysis (CFA) to assess the

variables' unidimensionality, validity, and reliability. During this process, we employed series tests to compare a theoretical measurement model of the study variables. Second, we specified the hypothesis to examine the fit of the structural model. The study estimated the path coefficients for statistical significance and overall model fit assessments.

3. Results

There was a total of 242 individuals who took part in the research project. As a result of the fact that 63% of the participants were female and 27% were male, the female representation was significantly higher. More than two-thirds of the sample was comprised of young individuals, forty-nine percent of whom were under the age of thirty and thirty-one percent of whom were between the ages of thirty and forty-nine years old. Nineteen percent of the respondents were between the ages of forty and forty-nine, while ten percent were older than forty-nine.

Concerning the degree of education attained, 36 percent of the respondents had completed a certificate program, followed by 31 percent who had completed a diploma program. Twenty-seven percent of the study population had a bachelor's degree, and sixteen percent had a master's degree or higher education, indicating that the study population had a moderate level of education.

Regarding the marital status of the respondents, over half of them were single (49 percent), while forty percent were legally married. Only a smaller percentage of people were widowed (2%), or divorced (9%) each. When it came to religion, the majority of people classified themselves as Muslims (63%), followed by Christians (27%), people who practiced traditional religions (9%), and non-Muslims (3%).

Table 1 - Demographic Profile of the Respondents

Variable	Level	Number of responses	Percentage %
Sex	Male	89	27
	Female	153	63
	Total	242	100
Age	< 30	99	40.9
	30-39	75	30.1
	40-49	46	19
	>49	22	10
	Total	242	100
Educational attainment	Certificate	87	36
	Diploma	76	31
	First Degree	42	17
	Masters and above	38	16
	Total	242	100
Marital Status	Single	118	49
	Married	96	40
	Divorce	21	9
	Widowed	7	2
	Total	242	100
Religion	Islam	152	63
	Christian	66	27
	Traditional	20	9
	Other	4	3
	Total	242	100

3.1. Confirmatory factor analysis (CFA), reliability and validity analysis

Table 2 shows the summarized findings of the first step. The CFA factor loadings for all the measures were above the suggested 0.50 thresholds (ranging from 0.696 to 0.99) except for one item (JS4) from the job satisfaction scale, which recorded a factor loading of 0.455. According to Malhotra and Dash [23], if a measurement item is less than the suggested factor loading threshold and does not affect the reliability or validity of the particular scale, such an item must be retained for further analysis.

The study employed Cronbach's alpha to explore the scale's internal reliability. The scales' reliability coefficients are between 0.803 to 0.945, and they were greater than the 0.70 thresholds suggested by Nunnally [24], indicating sufficient internal consistency.

Regarding the convergent validity, Joreskog and Sorbom [25] and Kline [26] have suggested that it could be adequate if the measure's construct reliability exceeds 0.70 and the average variance extracted (AVE) is above 0.50. The construct reliability coefficients in this current study ranged from 0.812 to 0.949, and the AVE values ranged from 0.53 to 0.862, suggesting acceptable convergent validity for the measures.

The study also employed fit-statistics suggested by Hu and Bentler [27] to establish the suitability of the data sets. The fit indexes indicated the model had an acceptable fit to the data set with a Chi-square (X2) = 487.041, relative Chi-square (X2/df) = 1.292, standardized root mean square residual (SRMR) = 0.034, comparative fit index (CFI) = 0.985, Tucker-Lewis fit index (TLI) = 0.983, and root mean square error of approximation (RMSEA) = 0.048.

The study further assessed the AVE's discriminant validity (square root) with Amos Plugin developed by [28]. The discriminant validity values are accessible along the diagonal lines of the latent variable correlation coefficients in Table 3, which suggest sufficient discriminant validity.

Table 2 - CFA loadings and internal reliability testing

Variables	Item code	Estimate	S.E.	t-value	P	C–α	CR	AVE
Turnover Intention (TI)	TI	0.748				0.851	0.861	0.678
	TI2	0.956	0.063	17.432	***			
	TI3	0.748	0.065	15.49	***			
Financial Support (FNS)	FNS1	0.901				0.945	0.949	0.862
	FNS2	0.899	0.035	29.133	***			
	FNS3	0.773	0.043	18.489	***			
	FNS4	0.982	0.021	35.273	***			
	FNS5	0.882	0.034	28.312	***			

Variables	Item code	Estimate	S.E.	t-value	P	C–α	CR	AVE
Carrier Oppportnity Factors (COF)	COF1	0.865				0.935	0.937	0.832
	COF2	0.876	0.041	25.123	***			
	COF3	0.99	0.039	30.367	***			
	COF4	0.778	0.043	18.647	***			
	COF5	0.773	0.043	18.489	***			
Working condition (WC)	WC1	0.793				0.803	0.812	0.53
	WC2	0.783	0.062	15.86	***			
	WC3	0.819	0.063	16.475	***			
	WC4	0.455	0.065	8.826	***			
	WC5	0.786	0.065	14.143	***			
Personal factors (PF)	PF1	0.696				0.905	0.905	0.545
	PF2	0.745	0.081	13.999	***			
	PF3	0.78	0.081	14.599	***			
	PF4	0.769	0.078	14.418	***			
	PF5	0.724	0.076	13.622	***			
	PF6	0.749	0.077	14.07	***			

Note: *** p < 0.001, Cronbach's alpha (C–α), Construct reliability (CR), Average variance extracted (AVE)
Abbreviation: CR = Construct reliability, AVE = average variance extracted

Table 3 - Discriminant validity analysis

	TI	FNS	COF	WKC	PF
TI	**0.928**				
FNS	0.226***	**0.823**			
COF	0.345***	0.207***	**0.912**		
WKC	0.04	0.249***	0.048	**0.84**	
PF	0.360***	0.469***	0.409***	0.245***	**0.728**

Note: * p < 0.05, ** p < 0.01, ***p < 0.001
Abbreviations: Turnover intentions (TI), financial support (FS), Carrier opportunity factor (COF), Working Conditions (WKC), Personal factors (PF)

3.2. Means, standard deviation, and correlation analysis

Table 4 presents the means, standard deviation, and correlation analysis of the variables under study. The correlation analysis offers some initial support for the hypothesized relationships. It showed that Turnover intentions correlated with all the independent variables.

Table 4 - Means, standard deviation, and correlation

		1	2	
1.	TI	1		
2.	FNS	.298**	1	
3.	COF	.100*	.209**	
4.	WKC	.283**	.288**	(
5.	PF	.287**	.348**	(

Note: *p < 0.05; **p < 0.01
Abbreviation: Turnover intentions (TI), financial support (FS), Carrier opportunity factor (COF), Working Conditions (WKC), Personal factors (PF)

3.3. Hypotheses Testing: Assessing the main effect and mediating effect of Work engagement

The study employed the Smart PLS software to estimate the hypothesized associations illustrated in the conceptual framework (Figure 1).
We examined the main effect model (Table 5), which involves the effect of the controls variables, financial support, carrier opportunity factor, working conditions, and personal factors on turnover intentions. The results of model 2, as represented in Table 5, showed that the relationship between financial support and turnover intentions had a significant adverse (β=-.090, *p< 0.05*). However, increases in carrier opportunity factor showed a significant positive relationship with turnover intentions. It was again demonstrated that a statistically significant negative relationship with turnover intentions among nursing employees in rural health facilities (β = −0.110, p < 0.001). This study suggests that enhancements in working circumstances correlate with a decrease in nurses' intentions to resign from their existing positions. Personal factors (PF) demonstrate a robust and statistically significant negative correlation with turnover intentions (β = −0.197, p < 0.001), as illustrated in Table 5. The significance of this effect indicates that individual traits significantly influence nurses' decisions to stay in or depart from rural assignments. This study's personal determinants include intrinsic and relatively unchanging characteristics such as age, marital status, motivation, personal values, familial obligations, and individual coping mechanisms.

Table 5 - Results of the effects of the relationship between financial support, Carrier opportunity, Working Conditions, Personal factors and turnover intentions.

Variables	Turnover intention	Turnover intention
	Model 1 β (t)	Model 2 β (t)
Constant	3.447 (11.262)	2.955*** (6.662)
Gender	-.200 (-1.674)	-.226 (-1.957)
Age	-.041 (-7.	.002 (.043)
Educational	-.069	-.088 (-1.550)
Marriage	-.058	-.005 (-.042)
FNS		-.090* (-2.080)
COF		.254 *** (4.020)
WKC		-.110*** (-2.637)
PF		-.197*** (4.799)
R square	0.675	0.077
F	.726	6.640

Abreviation: Financial support (FS), Carrier opportunity factor (COF), Working Conditions (WKC), Personal factors (PF)

4. Discussion

This study investigated the impact of financial assistance, career potential variables, working circumstances, and personal characteristics on turnover intentions among nurses employed in health centers in rural areas in the Western North Region of Ghana. The results indicate that turnover intention is influenced by a blend of organizational, professional, and human factors, highlighting the complex nature of workforce retention issues in rural and underserved areas.

In accordance with prior research, financial support shown a substantial negative correlation with turnover intention, suggesting that enhanced financial incentives diminish nurses' intents to depart from rural positions. This discovery corresponds with evidence from Ghana and other low- and middle-income nations, where insufficient compensation and restricted rural incentives have consistently been identified as significant factors in health worker attrition by [29].

In Ghana, rural nurses frequently have elevated living and transportation expenses in relation to their salary, exacerbated by restricted access to other revenue options. Despite Ghana's implementation of incentive schemes, including rural posting allowances and bonding policies, the ongoing turnover intentions indicate that current financial incentives may be inadequate or unevenly enforced across regions, especially in newly established or remote districts like the Western North Region.

The study indicated a substantial positive correlation between career opportunity characteristics and turnover intention, implying that restricted professional advancement opportunities in rural areas heighten nurses' propensity to depart. This finding is substantiated by the literature, which repeatedly indicates that limited access to continuous professional development, specialized training, and promotional prospects hinders long -term retention in rural areas [30][31]. In Ghana, advanced training programs, workshops, and postgraduate possibilities are primarily situated in urban areas, hindering rural nurses from enhancing their abilities or advancing their careers without relocation. Nursing and midwifery necessitate ongoing skill development; thus, perceived stagnation in rural assignments may amplify the desire to relocate to urban institutions where career progression is more feasible.

Moreover, working circumstances were markedly and adversely correlated with turnover intention, underscoring the significance of the work environment in nurse retention. This discovery supports previous research conducted in Ghana and analogous environments, indicating that insufficient infrastructure, scarcity of essential medications and equipment, excessive workloads, and occupational safety hazards lead to job dissatisfaction and intentions to leave [31][32]. Rural health institutions in Ghana frequently function with insufficient staffing, substandard accommodation, inconsistent energy supply, and inadequate water and sanitation services, all of which intensify occupational stress. Enhancing working conditions via improved infrastructure, sufficient supplies, and effective supervision may thus represent one of the more pragmatic measures for increasing retention in rural regions.

Moreover, personal factors exhibited a pronounced negative correlation with turnover intention, suggesting that individual attributes such as age, married status, motivation, familial obligations, and personal values substantially affect nurses' choices to persist in rural practice. This conclusion corresponds with earlier research indicating that older, married, and more experienced health workers exhibit better retention rates, likely due to their stronger community connections and preferences for job stability [33]. In Ghana, younger nurses frequently perceive rural assignments as provisional positions before to relocating to metropolitan institutions or seeking advanced study. This underscores the necessity for retention initiatives that consider nurses' life stages and personal situations, including variable posting durations, spousal accommodation regulations, and family-supportive interventions.

The findings indicate that mitigating turnover intentions among rural nurses in Ghana necessitates a thorough and contextually relevant strategy. Financial incentives alone are improbable to suffice without enhancements in working conditions, broadened career development options, and rules that recognize personal and social realities. Enhancing the retention of the rural health personnel is essential for Ghana's advancement towards Universal Health Coverage, as ongoing turnover jeopardizes service continuity and quality in communities with the most significant health need.

5. Conclusion

This study examined the determinants of turnover intentions of nurses employed in rural medical centers in the Western North Region of Ghana. The results indicate that financial assistance, working conditions, career advancement opportunities, and personal circumstances substantially affect nurses' intents to depart from rural positions. Enhanced financial incentives, advantageous working conditions, more supportive personal circumstances correlated with diminished turnover intentions, but restricted career growth options heightened nurses' propensity to depart. The study emphasizes that nurse turnover in rural Ghana is influenced by a confluence of organizational, professional, and human factors. Mitigating turnover intentions necessitates comprehensive retention tactics that enhance job conditions, broaden professional development options, and take into account the personal situations of nurses to fortify the stability of the rural health workforce.

6. Limitation of the study

The study's conclusions are constrained by its cross-sectional design, which limits causal interpretation of the identified relationships. The limited sample size and concentration on nurses from a specific location

may restrict the applicability of the findings to other rural areas in Ghana. Furthermore, dependence on self-reported data may have resulted in recollection and response biases. Future research utilizing bigger, multi-regional samples and longitudinal or qualitative methodologies is advised to yield more profound insights into the determinants of turnover intentions among rural health professionals.

A.1. Abbreviation

AVE – Average Variance Extracted
CFA – Confirmatory Factor Analysis
CFI – Comparative Fit Index
CHPS – Community-based Health Planning and Services
COF – Career Opportunity Factors
CR – Construct Reliability
FNS / FS – Financial Support
HCWs – Health Care Workers
HRH – Human Resources for Health
KMO – Kaiser–Meyer–Olkin Measure of Sampling Adequacy
MOH – Ministry of Health
PF – Personal Factors
PLS – Partial Least Squares
RMSEA – Root Mean Square Error of Approximation
SEM – Structural Equation Modelling
SPSS – Statistical Package for the Social Sciences
SRMR – Standardized Root Mean Square Residual
TI – Turnover Intention
TLI – Tucker–Lewis Index
UHC – Universal Health Coverage
WKC – Working Conditions
HCWs: Health Care Workers;

A.2. Availability of data and materials

Data is available upon request from the corresponding author

A.3. Competing interest

The authors declare that they have no competing interests.

REFERENCE

[1] Rajabi F, Esmailzadeh H, Rostamigooran N, Majdzadeh R, Doshmangir LJIjoph. Future of health care delivery in Iran, opportunities and threats. 2013;42(Supple1):23.

[2] Kwansah J, Dzodzomenyo M, Mutumba M, Asabir K, Koomson E, Gyakobo M, et al. Policy talk: incentives for rural service among nurses in Ghana. 2012;27(8):669-76.

[3] Nkomazana O, Mash R, Shaibu S, Phaladze NJPo. Stakeholders' perceptions on shortage of healthcare workers in primary healthcare in Botswana: focus group discussions. 2015;10(8):e0135846.

[4] Bossert TJ, Bossert T, Bärnighausen T, Bowser D, Mitchell A, Gedik G. Assessing financing, education, management and policy context for strategic planning of human resources for health: World Health Organization; 2007.

[5] Cosgrave C, Malatzky C, Gillespie JJIjoer, health p. Social determinants of rural health workforce retention: a scoping review. 2019;16(3):314.

[6] Tang SY, Browne AJ. 'Race'matters: racialization and egalitarian discourses involving Aboriginal people in the Canadian health care context. 2008;13(2):109-27.

[7] Asamani JA, Ismaila H, Plange A, Ekey VF, Ahmed A-M, Chebere M, et al. The cost of health workforce gaps and inequitable distribution in the Ghana health service: an analysis towards evidence-based health workforce planning and management. 2021;19(1):1-15.

[8] Organization WH. Working together for health: the World health report 2006: policy briefs: World Health Organization; 2006.

[9] Zurn P, Codjia L, Sall FL, Braichet J-MJBotWHO. How to recruit and retain health workers in underserved areas: the Senegalese experience. 2010;88(5):386-9.

[10] Ghana demographic and health survey G. key indicators. 2014 [Av --ailable from: https://www2.statsghana.gov.gh/docfiles/DHS_Rep o-rt/Ghana_DHS_2014-KIR-21_May_2015.pdf.

[11] Ghana Statistical Service G. Ghana Maternal Health Survey 2017: Key Findings.Rockville, Maryland, USA: GSS, GHS, and ICF. 2018.

[12] MOH. Health sector medium term development plan (HSMTDP), 2018–2021. Ministry of Health, Ghana. 2017.

[13] MOH. Staffing Norms for the Health Sector. Ministry of Health, Ghana. 2018.

[14] Campbell J, Buchan J, Cometto G, David B, Dussault G, Fogstad H, et al. Human resources for health and universal health coverage: fostering equity and effective coverage. 2013;91:853-63.

[15] Dussault G, Franceschini MCJHrfh. Not enough there, too many here: understanding geographical imbalances in the distribution of the health workforce. 2006;4(1):1-16.

[16] Marsden P, Chirchir BJFU, pdf tCPOahwcoisfmee. Mid-Term Evaluation of the Kenya Emergency Hiring Plan. 2008.

[17] Kim C. Recruitment and retention in the Navajo area Indian health service. Western Journal of Medicine. 2000;173(4):240.

[18] Getzin A, Bobot BL, Simpson D. Sustaining family physicians in urban underserved settings. J Fam Med. 2016;48(10):809-13.

[19] Nasiripour AA, Maleki MR, Tabibi SJ, Chimeh EEJJoKUoMS. Factors influence on geographic distribution of physicians in selected countries: A Review Article. 2013;17(9).

[20] Glasser M, MacDowell M, Hunsaker M, Salafsky B, Nielsen K, Peters K, et al. Factors and outcomes in primary care physician retention in rural areas. South African Family Practice. 2010;52(4):336-40.

[21] Anderson JY, Gerbing DW. Structural equation modelling in practice: a review and recommended two-step approach. Psychological Bulletin. 1988;103(3):411-23.

[22] Kline RB. Princeiples and Practice of of Structural Equation Modeling. second ed. New York: The Guilford Press; 2005.

[23] Malhotra N, Dash S. Marketing Research: An Applied Orientation (pp. 552–582). Prentice Hall; 2011.

[24] Nunnally J. C.(1978). Psychometric theory, 2nd ed McGraw-Hill, New York. 1978;2.

[25] Joreskog KG, Sorbom D. LISREL 8 user's guide. Chicago: Scientific Software. 1993.

[26] Kline RB. Principles and practice of structural equation modeling. 4 ed. New York: Guilford Press; 2015.

[27] Hu LT, Bentler PM. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. Structural Equation Modeling: A Multidisciplinary Journal. 1999;6(1):1-55.

[28] Gaskin J, Lim J. Master validity tool. AMOS Plugin In: Gaskination's StatWiki. 2016.

[29] Mohammadiaghdam N, Doshmangir L, Babaie J, Khabiri R, Ponnet KJBfp. Determining factors in the retention of physicians in rural and underdeveloped areas: a systematic review. 2020;21(1):1-23.

[30] Cosgrave C, Malatzky C, Gillespie J. Social determinants of rural health workforce retention: a scoping review. International journal of environmental research and public health. 2019;16(3):314.

[31] Ravaghi H, Taati E, Abdi Z, Meshkini A, Sarvarizadeh S. Factors influencing the geographic distribution of physicians in Iran: a qualitative study. Rural and Remote Health. 2015;15(1):29-39.

[32] Nkomazana O. Determining the causes for the shortage of human resources for primary health care in Botswana and developing a pilot intervention to address the problem: Stellenbosch: Stellenbosch University; 2017.

[33] Chowdhary O. Comparative analysis on attrition and retention of employees in BPO sectors. Research Review International Journal of Multidisciplinary. 2019;4(2):869-74.