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Assessing Management and Leadership Quality Styles of Sub-district Leaders in Relation to Staff Performance in the Sub-districts: The Pursuit of Health System Strengthening, Fanteakwa District

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Authors' contributions

This work was carried out in collaboration between both authors. Author JAA designed the study, managed the literature searches, wrote the protocol and first draft of the manuscript. Author IS performed the statistical analysis and interpretation of results. Both authors read, corrected and approved the final manuscript.

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ABSTRACT

Background: Sub-district leaders/managers are health care professionals appointed to lead or manage the sub-districts. A series of survey and monitoring reports have unearthed weak leadership and management at the sub-districts which has the potential of weakening the sub-district health systems and which contributes to the overall effect on resilient health systems. The objectives of the study were to: determine the leadership styles exhibited by sub-district leaders, analyze the association between the leadership/management styles of Sub-district leaders and performance of their subordinates, and analyze the relationship between Leadership Styles and performance of Sub-district leaders.
Methods: A cross-sectional survey design was employed. The average performance of the

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leaders was calculated based on the Ghana Health Service performance appraisals criteria. Principal Component and Exploratory Factor Analyses were used to determine the leadership styles exhibited whilst correlation and regression analyses were used to determine the association between: leadership styles and subordinates performance, and leadership styles and leaders performance.

Results: The results showed that transformational and supportive are the leadership styles exhibited by the leaders and both are positively related to the performance of their subordinates. However, transformational leadership style tends to add more to the subordinates performance than the supportive style leaders. Both leadership styles are each significantly associated to the performance of the leaders. Additionally, a higher overall leader's performance is associated with a higher subordinate's performance. Also a higher leadership ability rating is associated with higher leaders' performance.

Conclusion: Sub-district leaders or managers` leadership styles have a tremendous influence on the performance of their subordinates and the leaders themselves. The transformational and supportive leadership styles are positively related to the performance of the subordinates. A qualitative research is needed to obtain in-depth information about the leadership quality styles of sub-district leaders.

Keywords: Sub-district leaders; sub-district; leader; manager; health manager and Ghana.

1. BACKGROUND

The Sub-district health system is the first primary health care delivery point aimed to bring health care to the door steps of clients through the community-based health planning and services (CHPS) concept in Ghana. According to Ngang [1], cited in Sriruecha [2], sub-district leaders serve as Directors of the sub-district health system working as administrators, leaders and managers at the same time to enhance the performance of their subordinates and improve health care delivery.

With the exception of the leaders' area of specialty and intellect, special leadership/ management attributes that can improve work performance at the sub-districts include; collaboration or teamwork, communication skills [3], initiative [4], Innovation [5,6], leadership ability [7], management ability, coaching [5], personal effectiveness [8], planning and organizing, being accountable, fairness, trustworthiness [9], command respect [9], honesty [10], and integrity [10]. All these offer an enabling environment for leaders and managers of the sub-districts to enhance health care performance at the sub-districts level [2]. The management skills of superiors coupled with their leadership abilities can influence changes in life. Leadership is a blend of skills and knowledge in order to unite the followers to pursue a common goal [11]. Richard Bolden [12] defines leadership as "*a process whereby an individual influences a group of individuals to achieve a common goal*". According to [11] great leaders not only take decisions on things but place the organization first using tactical measures to achieve the desired objectives. Further, they classified leadership into two main styles: the transformational leadership and transactional leadership.

However, this study classified the two main leadership styles into the transformational leadership and supportive leadership styles. The supportive leadership style promotes self-confidence among the followers and is often used at highly demanding, tedious and uninteresting working environments. In addition to the routine leadership roles, a transformational leader inspires and motivates the followers, offers the needed assistance with a vision to achieving the desired objectives. According to subordinates' appraisals, transformational leadership promotes three major outputs: extra effort, effectiveness, and satisfaction. This leader is able to initiate new workable strategies and inspires the subordinates to solve problems. It is presently the famous leadership style widely used [11,9].

This study was conducted at the Sub-district levels headed by Sub-district leaders who are the most senior and qualified health professionals at the Sub-districts. These Sub-district leaders or managers are expected to lead and manage the sub-districts just as a District Director would manage a District. However, their leadership and management qualities and styles are questionable as to whether they have the right leadership and management qualities and skills

to handle the mantle of leadership. The study is geared towards helping to achieve resilient health systems and outcomes. The objectives of the study are to: determine the leadership styles exhibited by sub-district leaders, analyze the relationship between Leadership Style and performance of Sub-district leaders, and to analyze the relationship between Leadership Style and performance of subordinates. The hypothesis here is that the leadership/ management styles and qualities of the sub-district leaders affect their own performance and that of their subordinates.

2. METHODS

2.1 Study Design, Aim and Setting

This study is a cross-sectional survey with a quantitative method of data collection. The aim of the study was to: unearth the leadership styles exhibited by sub-district leaders and analyze the relationship between leadership Styles and performance of the subordinates and the sub-district leaders. The study was conducted in six (6) Sub-districts of Fanteakwa District which is one of twenty-six administrative Districts in the

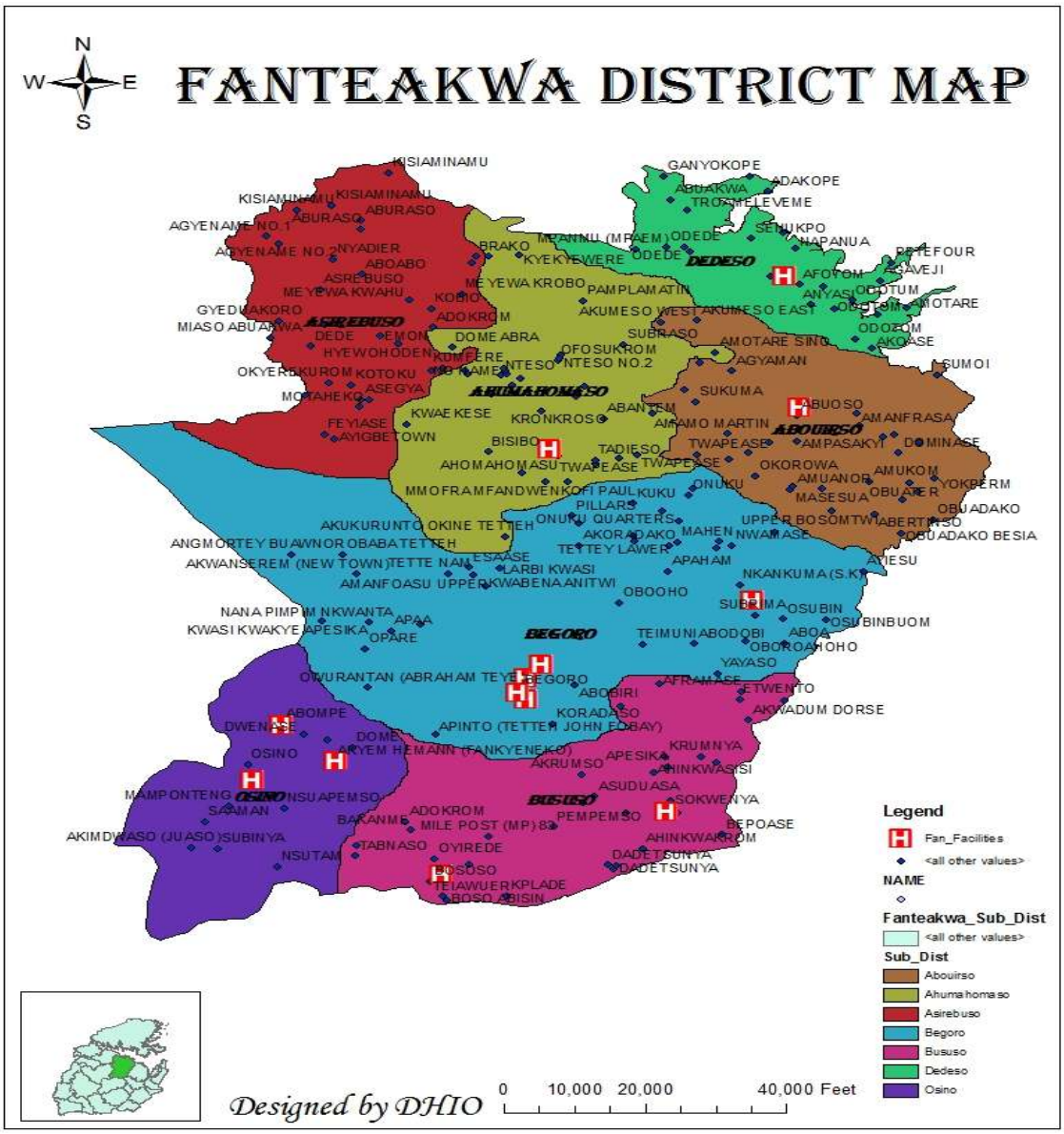

Fig. 1. Fanteakwa district map

Eastern Region of Ghana. The District was carved out of the old East Akim District in pursuance of the Government's decentralization policy. Begoro, the District capital is about 40 km from Koforidua. The district shares common boundaries with Afram Plains to the North; East Akim and Atiwa to the south; Kwahu South to the North-West and Manya and YiloKrobo to the East. The District has been zoned into seven (7) sub-districts with 60 demarcated CHPS zones out of which thirteen (13) are functional with 157 communities. The six Sub-districts are: Begoro, Osino, Bosuso, Ahomam, Abourso, and Asirebuso Sub-district. Currently, the population of the district is estimated to be 127,349 based on the 2017 projected population data.

2.2 Data Collection

The data collection tool used was a Sub-district/ In-charges Leadership and Management Performance rating tool which was developed to evaluate leadership and management performance of the subordinates who were the respondents. The variables used in determining the management/leadership quality styles were: Teamwork/collaboration, Communication skills, Initiative, Innovation, Leadership ability, Management ability, Personal effectiveness, Planning/organizing, Coaching, Being accountable, Fairness, Trustworthiness, Command respect, Honesty, and Integrity. These were all tabulated in the rating tool and the scores given by their subordinates. The researchers visited 20 health care facilities after obtaining ethical approval and distributed the rating tool to all Community Health Nurses and Officers (CHNs/CHOs), Field Technicians (FTs), Midwives and Orderlies present in the facilities at the time of the visit. The purpose of the study was explained to them and a consent form given to all voluntary participants to sign and conduct the appraisals (rating). The ratings were completed confidentially and returned instantly to the researchers. The leadership and management qualities and skills ranged from team work/collaboration through to integrity. The average performance score of the leaders was calculated based on the Ghana Health Service performance appraisals criteria. The management/leadership qualities were 15 in number and each had a score of 1 to 5.A score of 1 was the lowest and 5 the highest. Each Sub-district leader was scored based on those variables (qualities) and the total mark calculated and divided by 15 to determine the overall mark as Unsatisfactory (1 to 1.5), Marginal (1.6 to 2.5), Good (2.6 to 3.5), Very Good (3.6 to 4.5), and Excellent (4.6 to 5). For instance, if a sub-district leader scored 5,5, 4,4, 3,3,4,5,3,2,1,5,4,3, and 5 in the various predictive variables. The total mark was added up, which is 56 and divided by 15 and this gives 3.7 which is very good [15]. Additionally, the staff (Subordinates) performance appraisals rating by the Sub-district leaders and in-charges of the community-based health planning and services (CHPS) compounds were extracted from the Ghana Health Service appraisals (details found under Ghana Health Service Appraisals) and compared with the leaders' appraisals ratings from the subordinates. The appraisal tool used by the subordinates for the sub-district leaders was individually scored (self-administered).

2.3 Pilot Test

The data collection tool was pre-tested (piloted) among In-charges of the District Hospital and Salvation Army Clinic in the District Capital, Begoro to validate the reliability of the tool before its use. After the pre-testing, the tool was fine-tuned to capture the required data.

2.4 Study Participants

The participants were permanent staff of the sub-districts which were mostly Community Health Nurses/Officers (CHNs/CHOs), Midwives, Field Technicians, and a few Orderlies.

2.5 Sampling and Sample Size

A purposive sampling technique was used to recruit 48 participants from the different cadres of staff working under 6 Sub-district leaders and 2 CHPS compounds in-charges for the study. This sampling process excluded members of staff who were either on leave (annual leave and study leave) or absent from work on the day of data collection and therefore were not captured in the study.

2.6 Performance Appraisal

The Sub-district leaders, like majority of other cadres of staff in the health sector, appraise their subordinates and are also appraised by their superiors [13]. Performance appraisals were conducted for almost all members of staff according to the signed performance agreement between the staff and Ghana Health Service (GHS). The assessment was performed at the

end of 2016 and duly signed by their respective supervisors [14,15]. The process of determining performance bench marks, analyzing, synthesizing, and appraising work performance is markedly influenced by the leadership and management qualities and skills of the leader or manager. The Ghana Health Service performance appraisal rating system was adopted for use in this study.

2.7 Ghana Health Service Appraisals

This appraisal is conducted on an annual basis and it is usually done in January of every year by every Appraisee. The appraisee sets new objectives with the appraiser which will be used to assess the Performance of the Subordinate. The subordinates are appraised by the Appraiser/Supervising Officer. Agreed annual objectives are set (at least 2 objectives for the next 12 months) and agreed Mid-Year activities conducted to achieve the desired objectives and linked to job description. After the end of the year, the appraisee documents the achievements chucked up within the period and scorings are done based on the activities and objectives. In situations where one sets an objective and it requires about four (4) activities to achieve that objective, each activity is scored with a minimum mark of 1 and maximum of 5. After the ratings are completed, the average score is divided by four (4) to give the score for that particular objective. If the objectives are 3 or 4, the average scores are calculated and the overall mark determined as Unsatisfactory (1 to 1.5), Marginal (1.6 to 2.5), Good (2.6 to 3.5), Very Good (3.6 to 4.5), and Excellent (4.6 to 5). Additionally, five assessment factors (Quality of Work, Job Knowledge, Initiative & Resourcefulness, Attendance & Dependability, Attitude toward work, staff, patients & public) are also rated and the average scores determined as above. The overall average score is calculated and determined as Unsatisfactory (1.0 to 3.0), Marginal (3.1 to 5.0), Good (5.1 to 7.0), Very Good (7.1 to 9.0), and Excellent (9.1 to 10.0).A similar rating was conducted by the subordinates for their Sub-district leaders in this study. However, the scoring considered only the first part of the appraisals which come with the maximum mark of 5.

2.7.1 Explanation of ratings

Please tick with this symbol (√) your assessment of the Appraisee's leadership and management qualities and skills in meeting the sub-districts objectives.

1. Leadership and management performance is poor. Fails to meet position requirements in most areas.
2. Leadership and management performance is marginal. Meets position requirements in some areas.
3. Leadership and management performance is average. Some objectives achieved & individual contributed to achievement of objectives.
4. Leadership and management performance meet job requirements. Demonstrates successful and good performance.
5. Leadership and management performance consistently exceeds job requirements. Demonstrates unusually high, very successful and excellent performance.

2.7.2 Average score for assessment of performance: x/15

- ✓ Add (+) together ratings per quality/skill and divide by the number of qualities (15). This will give an average rating for the Appraisee.
- ✓ Place this overall average rating in the relevant box below by using a tick (√).
- ✓ This reflects the average performance of the Appraisee.
- ✓ For example, if the total score of the Appraisee is 3.4. The Appraisee's average score would be "Good"

Unsatis-factory	Marginal	Good	Very good	Excellent
(1 to 1.5)	(1.6 to 2.5)	(2.6 to 3.5)	(3.6 to 4.5)	(4.6 to 5)

2.8 Ethical Consideration

Approval for this study was sought from the Regional Health Directorate (RHD) in Koforidua, the District Health Directorate and Sub-district leaders and in-charges of the two CHPS compounds. Consent was obtained from the various respondents before the data were collected. Sufficient information on the aim of the research and the objectives to achieve were provided to the respondents. All the respondents were guaranteed of privacy and confidentiality in the deliberations and pertinent issues raised. They were also guaranteed data protection and told that the information was going to be used only for the purpose of the study.

2.9 Data Analyses

Data analyses were done by the use of SPSS version 18.0 and STATA 13. The data were keyed into SPSS and imported into STATA for the analyses. In the analyses, descriptive statistics and pairwise correlation coefficients among the proposed predictors were computed due to the continuous nature of the data. Upon realization of the significant correlations among the variables, a principal component analysis (PCA) was therefore conducted to reduce the number of predictors and also investigate the form of leadership style practiced by the use of exploratory Factor Analysis (FA). In determining the number of factors to rotate, Eigen value criteria are used. In this case, factors with Eigen values greater than one (1) were retained. The Varimax rotation procedure was used to classify the leadership and management qualities of the leaders into two main types of leadership styles. The relationship between the leadership style and performance of Subordinates and the leadership style and performance of Sub-district leaders were performed using linear regression model. Finally, a pairwise correlation coefficient was computed to determine the extent of linear relationship among performance of the sub-district leaders, performance of their subordinates, leadership ability and management ability. The results were presented in the form of frequencies, percentages, and tables with R-squares, F, and P-values.

3. RESULTS

3.1 Descriptive Results

This flow chart in Fig. 2 represents the expected number of participants for the study, the staff who were actually contacted and they agreed to participate in the study and the number of participants per sub-district within the District. Finally, a total of forty eight (48) permanent staff participated in the study with a response rate of 100%.The excluded members of staff were either on leave (annual leave and study leave) or absent from work on the day of data collection.

The results of the study are in two (2) main sections. The first section deals with the demographic characteristics of the respondents such as ethnicity, gender, age distribution and performance of the sub-district leaders and their subordinates. The second section dealt with correlations among Predictor Variables**.** The respondents for this study were made up of Akyems, 39.6%, Akuapems, 16.7%, Asantes 18.8%, Krobos 6.2% and others (Ga, Adangbe, Ewe, Builsa) formed 18.8%. Majority of the respondents were females, 85.4% and the males formed 14.6%.

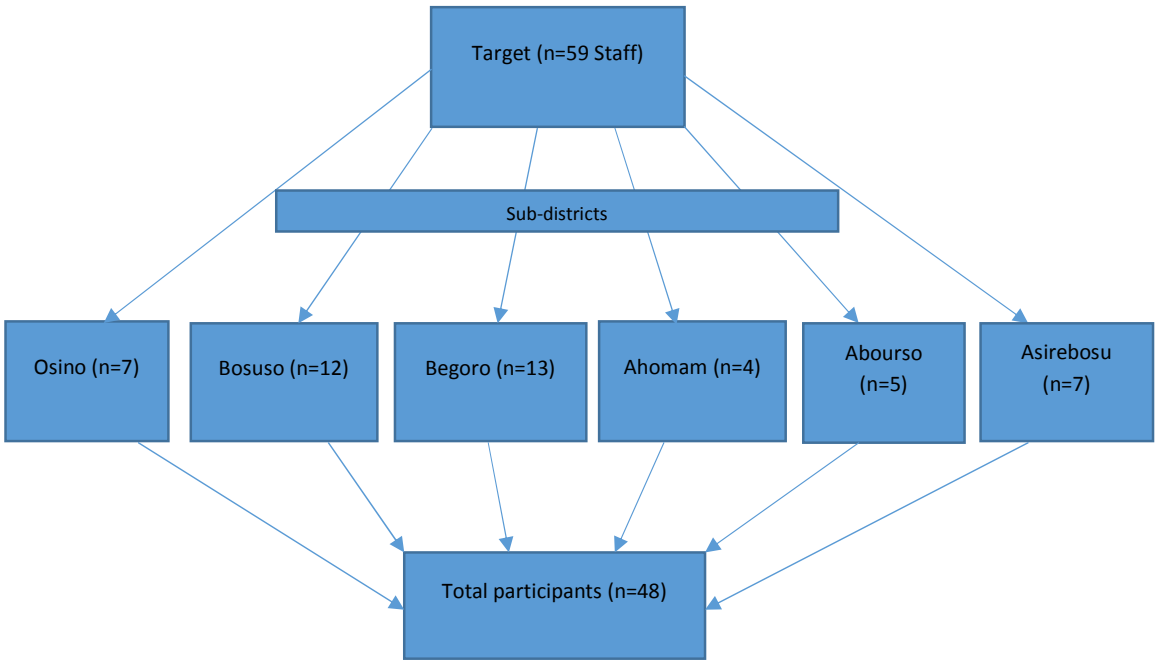

Fig. 2. Flow chart

Most of the respondents were from the 20-29 years age group which formed 52.1% and the 30-39 years age group formed 35.4%. There was nobody within the 40-49 years group and 12.5% from the 50-59 years age range. The results of the appraisals conducted by sub-district leaders` subordinates revealed that none of the leaders performed unsatisfactorily. However, only one person performed marginally. About thirty three (33.3%) percent of the leaders were good in performance and 41.7% performed very well. Approximately 23% of them were rated excellent based on the leadership and management qualities outlined. The sub-district leaders appraise their subordinates yearly and the 2016 appraisals were no exception. None of the appraisees performed unsatisfactorily or marginally. About 21% of the subordinates had good performance, none was excellent and 79.2% had very good performance.

3.2 Predictor Variables of Management and Leadership Quality Styles

It is observed in Table 1 below that Integrity has the highest mean of 4.14 (SD=0.89) and Innovation the lowest mean of 3.47 and (SD=1.00).

Table 1. Description of predictor variables

Variable	Mean	Standard deviation
Teamwork/Collaboration	4.02	0.97
Communication skills	3.89	0.91
Initiative	3.49	1.06
Innovative	3.47	1.00
Leadership ability	3.85	1.02
Management ability	3.70	0.91
Personal effectiveness	3.89	0.94
Planning/Organizing	3.79	1.04
Coaching	3.94	0.96
Being accountable	3.64	1.13
Fairness	3.79	1.06
Trustworthiness	3.94	1.07
Command respect	3.94	1.07
Honesty	4.02	0.97
Integrity	4.14	0.89

3.3 Correlations among Predictor Variables

In order not to violate the assumption of minimal multicollinearity in the multiple regression used in this study, a pairwise correlation coefficients among the proposed predictors were computed. The method used in this case was the Spearman because the variables were continuous. The results are in Table 2.

From Table 2, it can be observed that there are very high and significant correlations among the variables. Also, all the correlations are statistically significant at 5% significance level. Therefore, multicollinearity will be a serious issue if all the variables are entered in the model. A principal component analysis (PCA) is therefore needed to reduce the number of predictors and also investigate the form of leadership styles exhibited as witnessed by the subordinates through exploratory Factor Analysis (FA).

3.4 Principal Component Analysis

From Table 3, the data satisfies the criteria for PCA since the KMO Criteria is greater than 0.6 showing that the sampling size is adequate for the analysis and the Bartlett test of sphericity shows that there are significant pairwise correlations among the variables to be reduced. Using the Eigen value criterion, only two components (factors) are selected. These two factors account for 70.59% of the total variability in all the variables showing a good measure. This also shows that, according to the subordinates, the leadership styles exhibited are two. Using the Varimax rotation procedure, the components loadings for each factor is shown in Table 4. Correlation of less than 0.5 were discarded in order to assess which items load significantly with each of the factors.

The main reason for rotation is to condense the number of factors on which the identifiable variables to be determined have high loadings. From Table 4, it can be observed that Teamwork/Collaboration, Communication Skills, Initiative, Innovation, Management Ability, Personal Effectiveness, Planning/Organizing, Coaching, and Being Accountable are significantly loaded on Factor 1 and the remaining variables including Teamwork/ collaboration, communication skills and command respect are loaded on Factor 2. The two (2) main Factors were extracted and categorized into leadership styles exhibited as shown by the attributes that are strongly correlated to the factors. They are: transformational leadership style for factor 1 and supportive leadership style for factor 2. The coefficients of each of the variables in computing these two latent factors are given in the Table 5.

Table 2. Pairwise correlations among predictor variables

Variable	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14
X2	0.64													
X3	0.67	0.66												
X4	0.62	0.63	0.81											
X5	0.73	0.68	0.61	0.69										
X6	0.60	0.69	0.56	0.59	0.68									
X7	0.60	0.72	0.60	0.50	0.46	0.58								
X8	0.57	0.68	0.67	0.66	0.66	0.55	0.60							
X9	0.63	0.63	0.75	0.64	0.52	0.57	0.64	0.64						
X10	0.72	0.68	0.62	0.64	0.65	0.68	0.68	0.58	0.74					
X11	0.68	0.60	0.44	0.40	0.63	0.47	0.46	0.35	0.37	0.48				
X12	0.63	0.64	0.56	0.56	0.65	0.58	0.49	0.55	0.52	0.59	0.58			
X13	0.74	0.68	0.70	0.64	0.63	0.54	0.71	0.67	0.61	0.66	0.54	0.60		
X14	0.74	0.67	0.54	0.62	0.75	0.55	0.58	0.59	0.40	0.66	0.66	0.76	0.69	
X15	0.63	0.62	0.50	0.47	0.45	0.41	0.66	0.44	0.52	0.56	0.45	0.60	0.64	0.66

Significant correlations at 5% significance level are highlighted.

Note: Each variable was represented with the letter X. X1 represented Teamwork/collaboration, X2 Communication skills, X3 Initiative, X4 Innovative, X5 Leadership ability, X6 Management ability, X7 Personal effectiveness, X8 Planning/organizing, X9 Coaching, X10 Being accountable, X11 Fairness, X12 Trustworthiness, X13 Command respect, X14 Honesty, and X15 Integrity

Table 3. Number of important components and their eigen values

Total variance explained			
Component	**Initial Eigenvalues**		
	Total	**% of variance**	**Cumulative %**
1	9.50	63.35	63.35
2	1.09	7.24	70.59
3	0.84	5.57	76.16
4	0.61	4.06	80.23
5	0.53	3.51	83.74
6	0.47	3.15	86.89
7	0.40	2.66	89.55
8	0.34	2.29	91.83
9	0.28	1.88	93.71
10	0.26	1.71	95.42
11	0.19	1.28	96.70
12	0.15	1.03	97.73
13	0.15	0.97	98.69
14	0.11	0.74	99.44
15	0.08	0.56	100.00

KMO Criteria = 0.910, Bartlett's Test: Chi – square = 581.33, df = 105, p-value<0.001

Table 4. Rotated component matrix

Leadership/management qualities	**Component matrix**	
	1	**2**
Teamwork/Collaboration	0.51	0.71
Communication skills	0.64	0.58
Initiative	0.83	
Innovative	0.76	
Leadership ability		0.69
Management ability	0.60	
Personal effectiveness	0.67	
Planning/Organizing	0.76	
Coaching	0.87	
Being accountable	0.69	
Fairness		0.85
Trustworthiness		0.73
Command respect	0.63	0.56
Honesty		0.85
Integrity		0.61

Note. Factor loadings < .5 were suppressed

The average rating of subordinates' appraisal in Table 6 is 7.45 out of 10. Since the two leadership styles are computed on scores of factor analysis, the mean and standard deviation are expectedly 0 and 1 respectively.

3.5 Relationship between Leadership Style and performance of Subordinates

To assess the relationship between the form of leadership style and the performance of subordinates, a linear regression model was used. The leadership styles are the predictors in this case and the performance of the subordinates is the outcome variable. The results are in Table 7.

Table 5. Component score coefficient matrix

Leadership/ management qualities	**Component**	
	Transfor-mational style	**Supportive style**
Teamwork/ Collaboration	-0.04	0.18
Communication skills	0.07	0.06
Initiative	0.27	-0.17
Innovative	0.22	-0.11
Leadership ability	-0.04	0.18
Management ability	0.10	0.01
Personal Effectiveness	0.15	-0.04
Planning/Organizing	0.23	-0.13
Coaching	0.34	-0.25
Being Accountable	0.13	-0.02
Fairness	-0.28	0.41
Trustworthiness	-0.11	0.24
Command respect	0.08	0.05
Honesty	-0.18	0.33
Integrity	-0.05	0.16

Table 6. Descriptive of variables in leadership styles and appraisal

	Mean	Std. dev
Performance appraisal subordinates	7.45	0.62
Achievement-oriented	0.00	1.00
Supportive style	0.00	1.00

Table 7. Relationship between leadership styles and subordinate's performance

Attributes	Coefficients	Std. error	t	p-value
Intercept	7.45	0.06	125.24	<0.001
Transformational style	0.44	0.06	7.34	<0.001
Supportive Style	0.16	0.06	2.72	0.009
R-square = 56.3%		F(2,44)= 30.620		p-value < 0.001

From Table 7, it is observed that, the regression model (leadership styles) is significant in predicting the performance of the subordinates (p-value < 0.001). The two leadership styles together, account for about 56% of the variability in the performance of the subordinates. Subordinates with leaders who increase their score in Transformational leadership style by one have an increase in their performance by 0.44. An increase in the score of leaders with supportive style by one increases the performance of their subordinates by 0.16. This means that, both transformational and supportive leaders are positively related to the performance of their subordinates. However, transformational leadership style tends to add more to the subordinates performance than the supportive style leaders.

3.6 Relationship between Leadership Style and Performance of Sub-district Leaders

Assessing the relationship between the form of leadership style and the performance of the leaders themselves, a linear regression model was used once again. The leadership styles are the predictors in this case and performance of the leaders is the response variable. The results are clearly stated in Table 8.

From the Table 8, the regression model shows that, the two leadership styles together account for about 97% of the variability of the performance of the leaders. Both the transformational style (0.58) and the supportive leadership style (0.53) are each positively associated to the performance of the leaders. Each of the leadership styles is also statistically significant. Thus an increase in the transformational style score by a leader increases the performance by 0.58 given that there is no change in the supportive score.

3.7 Pairwise Relationships

To examine the extent of linear relationship among performance of leaders, performance of subordinates, leadership ability and management ability, pairwise correlation coefficients were computed. The results are shown in Table 9.

From Table 9, the correlation between management ability and performance of leaders is 0.72 showing a high positive linear association. The correlation between leaders' performance and subordinates performance, leadership ability and leaders' performance are 0.72 and 0.82 respectively. These show that a higher leader's performance is associated with a higher

Table 8. Relationship between leadership styles and sub-district leader's performance

Attributes	Coefficients	Std. error	t	p-value
Intercept	3.85	0.02	218.27	<0.001
Transformational style	0.58	0.02	32.27	<0.001
Supportive Style	0.53	0.02	29.82	<0.001
R-square = 97.3%		F(2,44)= 965.71		p-value < 0.001

Table 9. Correlation among management/leadership abilities and performance

Attributes	Leadership ability	Management ability	Performance of leaders	Performance of subordinates
Leadership ability	1			
Management ability	**0.68**	1		
Performance of leaders	**0.82**	**0.72**	1	
Performance of subordinates	**0.57**	**0.58**	**0.72**	1

subordinate's performance. Also a higher leadership ability rating is associated with higher leaders' performance.

4. DISCUSSION

The sub-district health system in Ghana which is termed as "sub-district health promoting hospitals" in Thai [2] is the main stage in the functional structure of the Ghana health service that generates almost all the public health indicators for informed decision making. They provide close-to-client primary health care services to the general populace and making it accessible and equitable. In achieving this, therefore, there is the need to strengthen the administrative systems within the sub-districts. This is where leadership and management play a vital role in this study. Leadership is a societal stimulus where a leader diligently seeks the support of the subordinates to work toward achieving an organizational goal. A leader is a person who has followers and can inspire them to achieve certain objectives. According to a study conducted elsewhere, Leadership style is the comparatively dependable trajectory of behavior that describes a leader [16]. The Transformational Leadership style places more emphases on the well-being and development of the followers. Therefore, managers who exhibit this leadership style inspires and motivates their subordinates to achieve the desired objectives. This type of leadership occurs where the manager takes keen interest in the employees and works to improve performance by shaping the intentions and morals of subordinates [16]. Leaders in the supportive style constantly back their members in every aspect of the work. The leaders are always on the side of their colleagues (subordinates) protecting and supporting them as a team. In this aspect of leadership, the subordinates are always in need of the leaders' sense of motivation and support to perform [17].

The results of the demographic data in this study revealed that majority of the participants were within the age range of 20-29 years which is in consonance with the findings of Asamani et al. [18], and also consistent with the average age of nurses in Ghana [19]. This means the health sector has a strong workforce capable of going the extra mile to deliver effective and efficient health care if well harnessed.

In the data analyses process, exploratory factor analysis was conducted through the use of principal component extraction. The results of the analyses proved significant with higher KMO values which showed the appropriateness of the Factor analyses. Also, there are no missing observations in the data. Each item for the factor analysis had 48 cases which is good since it exceeds the minimum of at least 10 per item requirement. The factors that did not show could not yield strong correlations. The results of this study are in concurrence with previous study findings [20]. The supportive leadership style exhibited by the Sub-district leaders was positively associated with the performance of the leaders which is consistent with the findings of Asamani et al. [21]. Also, the Bartlett test of sphericity was performed and it showed that there were significant pairwise correlations among the variables to be reduced which agrees with the studies conducted by Vélez et al. [20].

Owing to the correlation analysis conducted for this study, the problem of multicollinearity could have arisen provided the correlation of predictor variables was above 0.9. In this study, all the predictor variables were statistically significant which could raise the issue of multicollinearity if all these predictor variables were entered into the model which is at variance with the findings of Young [22]. Based on this, a principal component analysis (PCA) was therefore used to reduce the number of predictor variables. Also, the Varimax rotation procedure was used to extract the

component loadings for each factor which is in concurrence with [23] study.

The results of the study have shown positive correlation ($p<.01$) between the two types of leadership styles, transformational and supportive leadership styles. The correlation between leaders' performance and subordinates performance, leadership ability and leaders' performance were both positively related, 0.72 and 0.82 respectively. These show that a higher leader's performance is associated with a higher subordinate's performance and a higher leadership ability rating is associated with a higher leaders' performance. This is in consonance with the study conducted by Salih et al. [24].

All the factor loadings less than 0.5 which is the minimum acceptable limit were excluded which is consistent with similar studies conducted by Semuel et al. [25]. Also, from the study conducted, all the leadership/management indicators were significantly loaded with factor loadings of more than 0.5 indicating positive correlation. This is in accord with similar findings by Ghana Health Service [19]. The findings in this study have shown that the predictor variables including Innovation were significantly correlated with the performance of both the leaders and subordinates. This finding agrees with the study conducted by Zehir [26]. Additionally, the study revealed that management/leadership is positively correlated to the performance of both the subordinates and the leaders themselves which agrees with the findings of Zehir [26]. According to the study findings, the two main leadership styles (Transformational and supportive) are positively associated to the performance of the leaders. Most significantly, it is evident that a leader's performance directly affects the organizations performance which is consistent with the findings of Nanjundeswaras [16].

The limitation of the study was basically on the secondary data that were extracted from the Ghana Health Service appraisals records. The authors had no control over the genuineness of the appraisal ratings which were conducted by Sub-district leaders for staff within the Sub-districts. Also, because the subordinates were appraising their immediate supervisors, there might be some level of biases towards the ratings for their leaders which may not be a true reflection of their leadership abilities just to win their supervisors favour despite the fact that it was conducted independently devoid of influences.

5. CONCLUSION

Finally, it can be concluded that leadership styles are significant in predicting the performance of subordinates. The two leadership styles, transformational and supportive are positively related to the performance of the subordinates. However, transformational leadership style tends to add more to the subordinates performance than the supportive leadership style. There was a high positive linear association between management ability and performance of leaders. The correlation between leaders' performance and subordinates performance, leadership ability and leaders' performance were positively related. This shows that a higher leader's performance is associated with a higher subordinate's performance and a higher leadership ability rating is associated with higher leaders' performance.

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AVAILABILITY OF DATA AND MATERIALS

Owing to privacy and confidentiality we would not put these data in the public domain. However, when necessary the corresponding author is available to be contacted for further details.

ETHICAL APPROVAL AND CONSENT

Ethical approval was obtained from the Regional Health Directorate research committee. Written informed consent was obtained from the District Director of health service, the sub-district leaders and participants before the data were collected. Participants were told that their participation in the study was voluntary and that no benefits were available for partaking in the study. The participants signed the consent form and agreed orally to participate in the study.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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