TEAM SKILL AND TEAMWORKING ASSESSMENT IN SELECTED RADIOLOGY DEPARTMENTS IN SOUTH-EAST NIGERIA

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ARTICLE INFO	ABSTRACT

Introduction: The Radiology Department, a sub-unit of the hospital is typically associated with teamwork to promote unity in the delivery of healthcare services. Unfortunately a divergent professional interest has been noted among the different professions that make up the departmental team. How this affects staff team skills and team working practice in the department becomes a discursive resource.

Objectives: To assess team working practice and staff team skills in radiology departments across south-east Nigeria.

Methods: Descriptive survey using expert validated questionnaires was conducted. Self-assessment questionnaires were distributed to 130 radiology workers, selected from 8 tertiary hospitals in the south-east geopolitical zone of Nigeria. Co-worker assessment of each staff was also carried out using the co-worker assessment questionnaire. Mean and standard deviation of scores were used for descriptive statistics, while for inferential statistics, ANOVA and Pearson's correlation were used.

Results: The average rating of team working practice in the various departments was consistently high: between 2.6 and 2.8 on a 4 point Likert scale. Homogeneity test using ANOVA showed significant variation in the team working scores among the hospitals ($p < 0.05$).

The range of team skill scores was 3.42 to 3.59 on a 5 point scale. The team skill rating was independent of the age and work experience of the radiology staff but varied significantly among the hospitals and staff designation ($p < 0.05$). A strong correlation was noted between staff designation and team skill scores ($r = 0.23$).

Conclusion: There is need for possession and exhibition of team skills at interpersonal and group levels. This work recommends regular team skill assessment.

INTRODUCTION

For many centuries, teams have been set up and drawn to allow for collective responsibility of many people with varying skills. A team is defined as a group of people with complementary skills, working towards a common goal. The combined knowledge and expertise of team members are necessary for effective performance of the team

and the whole organization as well, as each individual staff will bring a different set of personal, scientific and key skills to the group [1]. Through working together and interaction, they are able to balance their combined skills for effective team operation [2]. The organization benefits from the team only when it is effective. The hospital, a traditional team organization is made of sub-units or departments that are composed of teams. All the strategies of an effective team needs to be applied towards the realisation of its overall goal of patient care [3]. If good team working is promoted in the various departments, productivity will be enhanced [4]. Career paths in the hospital are not inter-connected and each specialized area thinks that the best way to accomplish the overall best is for their unit to operate in a way that suits its ideal contribution. Conflicts inevitably arise due to status structure, professional influence and intra-sectoral politics [5, 6].

The Radiology department, a subsystem of the hospital consists of people with varying skills and training requirements having roles that are inter-connected and highly interdependent for effective patient care delivery [7]. Considering the staff mix encountered in the Radiology department, there is need for the staff to work together towards attainment of high level of patient care [8]. As a way of monitoring performance and enhancing development, regular assessment of team skills becomes very necessary.

Unfortunately, literature search done did not reveal any research work done on team skills assessment of radiology staff. This work is therefore aimed at assessing interpersonal and group skills among workers in the Radiology department as a step towards achieving consensus commitments from the staff and to serve as a foundation for building a cohesive high performance team.

METHODS
Cross-sectional survey approach was adopted using questionnaires, administered to radiology staff of eight (8) selected tertiary hospitals in South-East Nigeria namely: Abia State University Teaching Hospital(ABSUTH) Aba; Ebonyi State University Teaching Hospital (EBSUTH) Abakiliki; Alex Ekwueme Federal University Teaching Hospital Abakiliki (AEFUTHA); Imo State University Teaching Hospital(IMSUTH) Orlu; National Orthopedic Hospital Enugu (NOHE); Nnamdi Azikiwe University Teaching Hospital (NAUTH) Nnewi; and University of Nigeria Teaching Hospital (UNTH) Enugu. At the time of research, the number of radiology workers in the selected hospitals was one hundred and eighty (180).

Two sets of questionnaires were distributed, each structured in English Language to cover the study objectives. The first set covered: demographic data; staff rating of team working in his/her department, using 4 point Likert scale ranging from strongly agree (1) to strongly disagree (4) (that is: strongly disagree=1, disagree=2, agree=3, and strongly agree=4); and staff self- rating of team skills in the six skill areas identified, using a 5 point Likert scale ranging from Never (1) to Always (5) (that is: never=1, seldom=2, sometimes=3, often=4, and always=5). Out of the 180 questionnaires distributed, 130 were returned duly completed giving a percentage return of 72%. Multi-rater assessment of the staff team skills was performed, by distributing the second questionnaire: the co-worker assessment questionnaires to at least 2 co-workers of each staff assessed. Information obtained were type and duration of relationship between co-worker and staff being assessed and the co-worker's rating of team skills of the staff. Confidentiality was assured and maintained throughout the data collection period.

After collecting the filled questionnaires, the data for each respondent was written to reflect the average raring of each of the items outlined. The staff perception of team working practice in their departments, was arranged into four sub headings: Team working in the department (TEAMWOR); Departmental meeting (MEETDEP); Communication in the department (COMMDEP); and Conflict resolution in the department (CONFLRES). In addition, the team skill ratings for each staff for both self and co-worker ratings were grouped into the six skill areas: Communication skill (COMSKIL); People and human relations (PHRELA); Team work and working with others (TWWWO); Innovation and problem solving (IPSOLV); Dealing with change (DWCHANG); Business value (BUSVALU) [9-14].

The data for each staff were then arranged according to respondents': Age, Gender, Designation, Work experience and Hospital. For descriptive statistics, mean and standard deviation of scores were used. For inferential statistics, one-way analysis of variance (ANOVA) was used mainly for homogeneity tests. Correlation analysis

using the Pearson's correlation was also carried out to assess relationships between the score items and the individual staff demographic data.

STATEMENT OF HYPOTHESES

1. $(H_0)_1$ = There is no significant difference in the opinions of radiology workers in the different hospitals on level of team working in their departments.

   $(H_1)_1$ = There is significant difference in the opinions of radiology workers in the different hospitals on level of team working in their departments.

2. $(H_0)_2$ = There is no significant difference in the opinions of the different staff groups on the level of team working in their departments.

   $(H_1)_2$ = There is significant difference in the opinions of the different staff groups on the level of team working in their departments.

3. $(H_0)_3$ = Team skill rating is independent of the hospital where the staff is working.

   $(H_1)_3$ = Team skill rating is dependent on the hospital where the staff is working.

4. $(H_0)_4$ = Team skill rating is independent of staff designation

   $(H_1)_4$ = Team skill rating is dependent on staff designation

RESULTS

Table 1: Demographic data on respondents

Age Distribution of Respondents Age	
<20Yrs	8 (6.2%)
21 -30 Yrs	30 (23.1%)
31-40 Yrs	52 (40%)
41- 50 Yrs	29 (22.3%)
>50 Yrs	11 (8.4%)
Grouping of Respondents According To Hospital	
UNTH	30 (23.1%
NOHE	13 (10.1%)
NAUTH	14 (10.5%)
FMC Owerri	15 (11.5)
AEFUTHA	11 (8.5%)
IMSUTH	7 (5.4)
EBSUTH	25 (19.2)
Professional Classification of Respondents	
Radiographers	46 (35.4%)
Radiologists	26 (20.0%)
Nurses	10 (7.7%)
Darkroom Technicians	11 (8.5%)
Attendants	27 (20.8%)
Clerical Staff	10 (7.7%)
Gender of Respondents	
Male	86 (66.2%)
Female	44 (33.8%)
Work Experience of Respondents	
< 1YR	11 (8.5%)
1-2YRS	17 (13.1%)
3-5YRS	32 (24.6%)
6-10YRS	43(33.1%)
>10YRS	27(20.7%)

The results of the work were arranged to show the descriptive and inferential statistics separately. From Table 1, it can be seen that the greatest percentage of the respondents were within the 31-40 years age group (52 = 40%) while <20Yrs (8 = 6.2%) showed the least frequency. The largest number of respondents came from UNTH (n=30) and the least from IMSUTH (n=7) constituting 23.1% and 5.4% of the total respondents respectively. The staff designation that showed the highest frequency was radiographers (46 = 35.4%). Nurses and clerical staff showed the lowest frequency of 10 each (7.7%). The greatest percentage of the staff has 6-10 year work experience (n=43) and majority were male (86 = 66.2%).

Table 2: Rating of Departmental teamwork according to staff designation, work experience and hospital

Staff designation against departmental teamworking rating				
Staff Designation	Departmental teamworking rating indices*			
	TEAMWOR	MEETDEP	COMMDEP	CONFLRES
Radiographers	2.96	2.63	2.78	2.85
Radiologists	2.63	2.33	2.35	2.62
Nurses	2.90	2.57	2.77	2.80
Darkroom Technicians	3.06	3.00	2.92	3.00
Attendants	2.73	2.43	2.49	2.85
Clerical Staff	2.70	2.20	2.57	2.90
Respondents' years of work experience against departmental teamworking rating				
Work experience	TEAMWOR	MEETDEP	COMMDEP	CONFLRES
<1Yr	2.75	2.2	2.7	3.0
1-2Yrs	2.9	2.7	2.75	3.15
3-5Yrs	2.6	2.5	2.5	3.2
6-10Yrs	2.5	2.4	2.45	2.75
>10 Yrs	2.8	2.5	2.6	2.7
Hospital against departmental teamworking rating				
Names of hospitals	TEAMWOR	MEETDEP	COMMDEP	CONFLRES
UNTH	2.55	2.12	2.39	2.47
NOHE	3.27	3.12	3.08	2.92
NAUTH	2.39	2.11	2.12	2.50
FMC Owerri	3.01	2.77	2.87	3.00
AEFUTHA	2.85	2.45	2.64	3.18
IMSUTH	3.51	3.36	3.29	3.71
EBSUTH	2.71	2.48	2.39	2.52
ABSUTH	3.22	2.97	3.13	3.47
Summary of Descriptive statistics for staff rating of team working in their departments				
Score items	**Number of respondents**		**Mean rating± SD**	
TEAMWOR	130		2.84±0.56	
MEETDEP	130		2.55±0.83	
COMMDEP	130		2.64±0.74	
CONFLRES	130		2.83±0.85	

*TEAMWOR = Teamworking in the department; MEETDEP = Departmental meeting; COMMDEP = Communication in the department; CONFLRES = Conflict resolution in the department

Table 2 shows the staff perception of team working practice in the radiology departments studied. Using a 4-point Likert scale (0-1.0 = strongly disagree; 1.1-2.0 = disagree; 2.1 -3.0 = agree; 3.1 – 4.0 = strongly agree), the overall mean rating indicates that there is good team working practice in the departments, useful and regular meeting in the departments, adequate communication between members of staff of the department and good resolution of conflicts in the departments.

Table 3: Team skill ratings according to staff Categories and hospital

Staff designation against team skill rating						
Staff categories	Team Skill rating indices*					
	COMSKIL	PHRELA	TWWWO	IPSOLV	DWCHANG	BUSVALU
Radiographers	3.68	3.57	3.73	3.68	3.84	3.59
Radiologists	3.71	3.60	3.77	3.55	3.92	3.60
Nurses	3.70	3.60	3.75	3.58	3.80	3.58
Darkroom Technicians	3.38	3.29	3.48	3.30	3.26	3.33
Attendants	3.44	3.39	3.33	3.41	3.30	3.43
Clerical Staff	3.56	3.42	3.57	3.47	3.59	3.47
Hospital against Team Skill rating						
Names of hospitals	COMSKIL	PHRELA	TWWWO	IPSOLV	DWCHANG	BUSVALU
UNTH	3.35	3.26	3.28	3.35	3.56	3.47
NOHE	3.51	3.62	3.69	3.63	3.48	3.55
NAUTH	3.46	3.19	3.39	3.20	3.60	3.51
FMC Owerri	3.71	3.72	3.87	3.63	3.67	3.23
AEFUTHA	3.64	3.20	3.48	3.45	3.75	3.38
IMSUTH	4.24	4.06	4.52	4.43	4.17	4.24
EBSUTH	3.40	3.22	3.25	3.16	3.30	3.25
ABSUTH	3.56	3.42	3.57	3.47	3.59	3.47
Summary of Descriptive statistics of Team Skill rating						
Skill areas	**Number of respondents**			**Mean rating± SD**		
COMSKIL	130			3.56±**0.59**		
PHRELA	130			3.42±**0.73**		
TWWWO	130			3.57±**0.67**		
IPSOLV	130			3.47±**0.70**		
DWCHANG	130			3.59±**0.64**		
BUSVALU	130			3.47±**0.53**		

*COMSKIL = Communication Skills; PHRELA = Public and Human Relations; TWWWO = Team Working and Working with Others; IPSOLV = Innovation and Problem Solving; DWCHANG = Dealing with Change; BUSVALU = Business Values.

Table 3 shows the average rating of the radiology workers' team skills using a 5 point Likert scale (0-1 = Never; 1.1-2 = Seldom; 2.1 -3 = Sometimes; 3.1- 4= Often; 4.1-5 = Always). The mean ratings of 3.42 – 3.59 on a 5 point Likert scale showed that the workers often display all the team skills. This means that they exhibit communication skills, public and human relations, team working and working with others, innovation and problem solving, dealing with change and business values.

Table 4: Summary of ANOVA test on mean rating of departmental team working practice against hospitals and staff designation

	HOSPITALS		STAFF DESIGNATION	
ITEMS	F	Sig	F	Sig
TEAMWOR	9.006	.000	2.745	.031
MEETDEP	5.286	.000	2.882	.025
COMMDEP	5.502	.000	2.545	.043
CONFLRES	5.102	.000	.636	.638

Table 4 showed Test for possible homogeneity of the team working perception rating between the hospitals and staff designation. One-way ANOVA was used: Scheffe test with significant level of 0.05. It can be seen that there is significant difference in the ratings of all the score items between the different hospitals. Therefore the null hypothesis $(H_0)_1$ is rejected and the alternative $(H_1)_1$ accepted. It can also be seen from the Table that of all the score items, only conflict resolution rating showed no significant difference between the professional groups.

Table 5: Summary of ANOVA test on mean rating of team skills based on hospital, staff designation, gender and working experience

ITEMS	HOSPITAL		STAFF DESIGNATION		STAFF GENDER		STAFF WORK EXPERIENCE	
	F	Sig	F	Sig	F	Sig	F	Sig
COMSKIL	3.121	.005	2.206	.072	2.036	.156	.676	.610
PHRELA	2.673	.013	3.749	.006	5.427	.021	1.007	.407
TWWWO	6.989	.000	3.766	.006	5.342	.022	1.109	.355
IPSOLV	4.149	.000	4.205	.003	3.844	.052	1.165	.330
DWCHANG	1.997	.061	9.657	.000	1.668	.199	1.693	.156
BUSVALU	3.195	.001	4.113	.004	6.729	.011	.997	.412

Table 5 showed Test for possible homogeneity of team skill ratings based on hospital, staff designation gender and working experience. One way ANOVA was used. Scheffe test with significant level of 0.05. All the skill areas except dealing with change showed significant difference with hospital. It also showed that all the skill areas except communication skill showed significant difference with staff designation. It also showed that whereas communication skills, dealing with change and innovation/problem solving did not vary significantly with gender, public and human relation, team working and working with others and business value vary significantly with gender.. From the Table, it can also be seen that there is no significant difference in the mean ratings of the skill areas based on work experience. Therefore the null hypothesis is accepted which states that a team skills rating is independent of work experience.

Table 6: Correlations of respondents' views on departmental team working practice with their demographic data

		TEAMWOR	MEETDEP	COMMDEP	CONFLRES
AGE	P. Corel	0.056	.123	.014	-.118
	Sig. (2-tailed)	.526	.165	.870	.180
	N	130	130	130	130
DESIGNATION	P. Corel	-.112	-.080	-.079	.040
	Sig.(2tailed)	.203	.363	.370	.652
	N	130	130	130	130
WORK EXPERIENCE	P. Corel	-.050	.026	-.075	-.137
	Sig.(2-tailed)	.574	.767	.393	.119
	N	130	130	130	130
GENDER	P. Corel	-.098	-.056	-.097	-.030
	Sig. (2-tailed)	.268	.523	.272	.738
	N	130	130	130	130
HOSPITAL	P. Corel	.293**	.222**	.157	.236**
	Sig. (2-tailed)	.006	.000	.075	.007
	N	130	130	130	130

Note: ** = correlation is significant at the 0.01 level (2-tailed)

Table 7: Correlation of team skills ratings with age, designation, work experience, gender, and hospital

		AGE	DESIGNATION	WORK EXPERIENCE	GENDER	HOSPITAL
COMSKIL	P. Corel	.087	-.226	-.062	-.125	.187
	Sig.(2-tailed)	.327	.010	.484	.156	.033
	N	130	130	130	130	130
PHRELA	P. Corel	.183	-.260	.030	-.202	.093
	Sig.(2tailed)	.073	.003	.738	.021	.291
	N	130	130	130	130	130
TWWWO	P. Corel	.179	-.308	.068	-.200	.073
	Sig.(2-tailed)	.042	.000	.443	.022	.411
	N	130	130	130	130	130
IPSOLV	P. Corel	.103	-.298	.032	-.171	.073
	Sig. (2-tailed)	.243	.001	.715	.052	.411
	N	130	130	130	130	130
DWCHANG	P. Corel	.113	-.433	-.022	-.113	.023
	Sig.(2-tailed)	.202	.000	.807	.199	.795
	N	130	130	130	130	130
BUSVALU	P. Corel	.088	-.281	-.119	-.223	.006
	Sig. (2-tailed)	.321	.001	.178	.011	.947
	N	130	130	130	130	130

In Table 6, it can be seen that hospital showed significant correlation with all aspects of team working perception by staff except communication at 0.01 level. No other significant correlation was noted. In Table 7, designation showed strong negative correlation with all the team skill areas, all at 0.01 level. Hospital showed positive correlation with communication skill at 0.05 level of significance and age showed correlation with team working and working with others. Age also showed correlation with people and human relations, team working/working with others and business values.

DISCUSSION
A team has been defined as a number of people with complementary skills committed to a common purpose and that each team benefits from the diversity of its membership drawing on the variety of skills knowledge, experience and perspectives that all members bring to the team. Co-operation among the members are essential for effective team performance. The group should be made to know that they are a team, and are expected to perform as a team [1, 9]. The composition of the study sample is a reflection of the diverse professional groups that form the radiology work team: radiologists, radiographers, nurses, attendants, darkroom technicians and the clerical staff.

All the 130 respondents were required to rate teamwork practice in their various departments. The overall score of the staff perception of team working suggest that they all agree that team working exist in their departments. It was noted however that this opinion differ significantly between the different radiology departments studied. It could be that the workers could not acknowledge being part of the departmental team because of lack of and/or poor teambuilding and reinforcement skills by some departmental managers. Although very essential, team building has been identified as one of the hardest skills for a manager to learn [17]. Reward of team performance and qualitative and effective communication has been identified as being very essential for staff appreciation of team working in their work places [18, 19]. The significant correlation between the workers' work environment and perception of team working further confirms this relationship.

Meeting in the environment, communication in the department and departmental team working varied significantly between the different professional groups. This suggests that possibly some departments lack effective communications between the professional groups which may have led to existence of workplace barriers and concomitant poor team spirit and thus ineffective team working. Open communication and positive

feedback had been identified as essential ingredient for effective work teams [2]. Promotion of unity is the hallmark of teamwork. Unfortunately in the hospital setting, an observation of "unity in diversity" predominates as professional interests introduce unintended divisive effects [6]. Inter-professional conflict becomes inevitable in an event poor team spirit exists. This has been associated with ineffective communication between the different professional groups [19, 20].

The team skills scale is such that 5 is always the most positive response. The results confirm that the workers' team skills are viewed quite positively since the mean scores are generally in the direction of frequent display of positive behaviours i.e. high team skill ratings (3.42 – 3.59 on a 5 point Likert scale). There may be several reasons for this. First, it is possible that people who showed a lower frequency of positive behaviours have shown improvement as a result of training and supervision. Second, the co-workers may have given higher ratings even when not fully merited. For each respondent that rated self, there were at least two co-workers that rated his/her team skills, and average of the scores was used to rate each staff. This approach was adopted with the aim of reducing bias and this was this work's assumption. From available literature, no work has been done on team skills assessment of radiology workers.

The team skills rating were independent of the workers' age and working experience. This may mean that the skill areas were inherent characteristics of individuals – more of their character trait- which may not change significantly, all things being equal. Personality type however has been linked to team behaviour [21]. Significant difference was however noted between the hospitals and staff designation. Possibly, variation in team building skills of the leaders may account for the variation among the departments and professional influence as well as status structure may be responsible for the team skills' dependence on staff designation [6, 22]. The strong correlation between staff designation and the team skills confirms this relationship. Although no work has yet been done on this area, the fact that there is varied skill mix in the radiology department may give a further explanation to the above observations. Also, gender variation was noted to have significant effects on the ratings for people and human relations, team working and working with others, and business values skill areas. This may suggest a close link between these skill areas.

CONCLUSION

Team working is gaining an increasing application in various organizations. The hospital being a traditional "teaming" institution needs to apply all the strategies of an effective team. This entails acquisition and utilization of team skills by the managerial staff as well as other staff who make up the work team. In order to maintain consistently high quality and good safety service delivery to patients, there is need for collaborative team work in the radiology department.

Good team working in the various radiology departments should be maintained and improved upon. Exhibition of good team skills by the radiology staff should be encouraged. Inculcation of these skills at training stage and through staff retraining in seminars and workshops is recommended. Regular assessment of team skill and departmental team working for control purposes by hospital management will help to promote good team working in the various departments and thus enhance productivity.

Consistent measurement of the staff team skills will go a long way towards enabling them to appreciate the need for effective team skills. Improved interpersonal skills, it is believed, will enhance performance and productivity of the various radiology departments.

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