

DETERMINANTS OF INTERPROFESSIONAL COLLABORATION AMONG HEALTHCARE PROVIDERS AT A NATIONAL HOSPITAL, KENYA.

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ABSTRACT

Background: Interprofessional collaboration (IPC) practice has been widely acknowledged as a model, capable to facilitate management of the growing healthcare burdens, patient centred healthcare and professional group growth. Determinants of interprofessional collaborations, which ensure synchronised quality healthcare service delivery require regular data. This study aimed at determining the level and factors influencing IPC among healthcare professionals at Kenyatta National Hospital.

Method: This quantitative descriptive cross-sectional study, in Orthopaedic and Surgical wards adopted stratified proportionate sampling. Data was collected using self-administered questionnaires and analysed using statistical Package for Social Scientists. Variables included sociodemographic, defining responsibilities, knowledge, personal growth, leadership influence, employment terms among others were rated then tested for association using Fischer's exact and multivariable logistic regression.

Results: Only 52.4% of participants had high IPC. The high IPC was significantly influenced by, marital status, work experience, rules and regulations, democratic leadership among others. The significant influence of age on IPC gave a ($p < .023$) with further analysis showing persons at 50yrs of age were five times likely to have high IPC compared to those of age 30yrs with adjusted Odds ratio (aOR = 5.11, 95%CI:2.11 – 16.11).

Conclusion: Interprofessional collaboration should be fostered by managers, policy makers and professional themselves.

Recommendations: Upholding of positive factors influencing high IPC is key, while practice and research gaps addressed regularly.

INTRODUCTION

Interprofessional collaboration (IPC) among health professionals refers to coming together of the various healthcare provider specialties for the common purpose of improving patient outcomes, (Heroe, 2017). The Institute of Healthcare Improvement (2008) developed a healthcare collaboration initiation among healthcare disciplines to improve healthcare systems by leveraging triple-aim initiatives entailing improving patient experience,

increasing population health and reducing health care cost. Hafeez et al (2018) says that IPC is a significant guideline for tackling patient safety, human resource shortage and health-care systems. These can be transformed through communication and IPC (Nurses & Cna, 2015; Agree and Disagree, 2006). A recent evidence on IPC report indicates that it enhances patient safety through synergy (Abdurrouf et al., 2021).



Collaborative efforts in healthcare have increased as a result of chronic and infectious disease burdens that are worsened by research gaps, practice and policy deficits in Africa (De-Graft Aikins et al., 2010). Thus collaboration in the healthcare is essential in every health professional to adapt besides work-teams, to collectively solve problems and make important decisions to design and effect healthcare plans, but data has been low (Busari et al., 2017). Thus, IPC faces challenges in clinical practice, for instance, in Norwegian health systems, IPCs are influenced by organizational and individual factors, although regular timely data to inform stakeholders is low. Individual influencing factors are professional culture, power and knowledge variations resulting to prolonged average length of hospital stay (ALOS) of patients stemming from gaps in healthcare provision, (Steihaug et al., 2016). Frameworks put in place to prepare health professionals to support collaborative practices resulted in increased collaboration in the care of aging population and a chronic and complex diseases set-up (Thibault, 2015).

Interprofessional collaboration provide opportunities to improve patient safety, cushion human resource shortage and address healthcare system challenges (Patima et al., 2020; Duty & Williams, 2016). Interprofessional collaborations show improvements in patient safety, professional satisfaction, health outcomes and reduction in healthcare costs (McInnes et al., 2015).

Evidence on whether various professional makes contribution to in-patient care through IPC was low in KNH. Additionally, facilitators, barriers and level of IPC had not been studied. Despite documented positive outcomes and impact, the status of IPC had

not been assessed in KNH orthopaedic and surgical wards, in Kenya's biggest tertiary hospital. The gap was thus associated with prolonged ALOS in orthopaedic wards and periods of patients awaiting surgical wards. These factors propelled the setting up this study. The research model in this study is the team effectiveness model by Hackman et.al (2006) which adopts five variables. The model advocates for a central goal driven by a clear vision and mission; roles and responsibilities, formulated standards procedures, positive relationships and a strong leadership guiding the team. The theoretical framework emphasis that if the five key components have to achieve its intentions then the goal in the institution must be predetermined, have a strategic plan aligned to organisation structure showing flow of responsibilities and roles including reporting line in the chain of command (D'Amour et al., 2005). Standard operating procedures (SOPs) ought to guide evaluation of team performance (Mayo & Woolley, 2016).

The main objective was to describe correlates of IPC among healthcare professionals and specific objectives were; to determine level of IPC, professionally related factors that influence IPC, interpersonal factors which influence IPC and identify the organizational factors which influence IPC among the healthcare professionals at KNH.

METHODOLOGY

A quantitative cross-sectional descriptive design was used. Determining the rate of IPC among healthcare professionals and progressively highlighting the professional, interpersonal and organizational factors that may affect the practice was the drive in this research. The study adopted independent variables as professional factors,

interpersonal factors and organizational factors while IPC was the dependent variable.

Data collection was collected from Orthopedic and Surgical wards among multidisciplinary healthcare professionals directly involved in regular patient care. The choice of study site was informed by routine secondary data regarding long-stay patients (one month and above) in orthopaedic wards and those awaiting surgery in surgical wards. These numbers remained high over a period of six months thus informing choice of specific study wards.

The study population comprised 270 healthcare professionals deployed in Orthopedic and surgical units who had worked in the hospital for at least two months as per table 1. Sample size was calculated using Cochran's formula.

Table 1: Distribution of Sample Size by Target Population in Orthopedic and Surgical Wards at KNH

No	Unit	Specialty	Target Population	Allocated Sample Size
1	Orthopedic	Nursing	119	71
	Surgery	Nursing	72	43
2	Orthopedic	Doctor	21	12
	Surgery	Doctor	29	17
3	Orthopedic	Occupational Therapist	5	3
	Surgery	Occupational Therapist	2	1
4	Orthopedic	Nutritionist	4	2
	Surgery	Nutritionist	2	1
5	Orthopedic	Health Information	4	3
	Surgery	Health Information	2	1
6	Orthopedic	Physiotherapist	3	2
	Surgery	Physiotherapist	2	1
7	Orthopedics & Surgery	Pharmacist	5	3
	Total		270	160

Data was collected using a self-administered combination of two questionnaires: one measuring index of IPC according to Peltonen et al (2020) and the other measuring perception on IPC determinants (Questionnaire-PINCOM-Q, A, 2006). Five-point Likert scale was used to ease measuring perception, communication of findings and simplify data analysis plan (Joshi et al., 2015). Participation was voluntary after signing an informed consent. Confidentiality, autonomy, anonymity, justice and data quality checks were upheld. Analysis was done using SPSS.

Results were presented in tables showing simple descriptive statistical measures, relationships between variables determined by Fischer's Exact test while association between independent and dependent variables were measured by multiple regression using ODDs ratio.

RESULTS

Response Rate

A total of 143 questionnaires were filled out and returned for analysis representing 89.4% response rate.

Social demographic characteristics of respondents

The average age was 38.4 years (SD±9.7), female 77(53%), 101(70.6%) married, 102(71.3%) nurses, and 83(58%) had diploma; 74(51.7%) worked for less than ten years, 87(60.8%) from orthopedic and 115(80.4%) working on permanent and pensionable terms, shown in Table 2

Table 2: Healthcare professionals' Demographic Characteristics at Kenyatta National Hospital

Characteristic	Frequency (n)	Percent (%)
Age (Mean, SD)	38.4 ± 9.7	
Age Categories		
<30 years	30	21.0
30 - 50 years	93	65.0
>50 years	20	14.0
Gender Distribution		
Male	66	46.2
Female	77	53.8
Marital Status		
Single	39	27.3
Married	101	70.6
Widowed	2	1.4
Divorced	1	0.7
Designation		
Medical doctor	21	14.7
Nutritionist	3	2.1
Nurse	102	71.3
Orthopedic technician	5	3.5
Health records officer	6	4.2
Occupational therapist	2	1.4
Physiotherapist	2	1.4
Pharmaceutical technician	2	1.4
Highest Education Level		
Certificate	1	0.7
Diploma	83	58.0
Higher diploma	5	3.5
Bachelor's degree	44	30.8
Master's degree	10	7.0
Years of Experience		
<10 years	74	51.7
≥10 years	69	48.3
Workstation		
Orthopedic	87	60.8
Surgery	56	39.2
Employment Terms		
Permanent	115	80.4
Contract	28	19.6

Level of interprofessional collaboration

The ten items that were investigated using the IPC questionnaire tool, were assessed using a Five-point Likert scale with number one depicting strongly disagreed while number five strongly agreed. All the scores were then summed up with the highest score of 50 and the lowest score of 10. An average score calculated which formed the basis of categorization into high IPC and low IPC. The average score was 36.736.7 (SD±4.8).

Therefore, those who had a total score of less than 36 were considered to have low IPC while those who scored ≥36 was considered to have high IPC. The findings showed that 52.4% (n =75) had high IPC while 47.6% (n =68), this indicates that IPC is moderately rated calling for more interventions and studies.

Association Between Demographic Characteristics and IPC Among Healthcare professionals at KNH

There was a significantly high association between age ($p<.03$), marital status ($p<.16$), educational level ($p<.08$) and years of experience ($p<.007$) and IPC as shown in table 4. Table 3 shows level of IPC using univariate analysis of independent variables, mean and standard deviation to summarize the findings. Average IPC score was considered at 36.7, less than 36 was low,

above 36.7 was high. As shown 75(52.4%) rated high 68(47.6%) distributed among different age-groups, gender, marital status, occupation, education level, years of experience, workstations and terms of employment. There was a significantly high association between age ($p<.03$), marital status ($p<.16$), educational level ($p<.08$) and years of experience ($p<.007$) and IPC.

Table 3: Association Between Demographic Characteristics and IPC Among Healthcare professionals at KNH

Socio-demographic Characteristics	High IPC <i>n</i> (%)	Low IPC <i>n</i> (%)	χ^2	<i>df</i>	<i>p</i> value
Age					
<30 years	20 (66.7)	10 (33.3)	7.510	2	.023*
30–50 years	41 (44.1)	52 (55.9)			
>50 years	14 (70.0)	6 (30.0)			
Gender					
Male	31 (47.0)	35 (53.0)	0.225	1	.244
Female	44 (57.1)	33 (42.9)			
Marital Status					
Single	29 (69.0)	13 (31.0)	6.570	1	.016*
Married	46 (45.5)	55 (54.5)			
Occupation					
Nurses	56 (54.9)	46 (45.1)	3.780	2	.151
Doctors	7 (33.3)	14 (66.7)			
Other technical health staff	12 (60.0)	8 (40.0)			
Education Level					
College	57 (60.6)	37 (39.4)	7.379	1	.008*
University	18 (36.7)	31 (63.3)			
Years of Experience					
<10 years	47 (63.5)	27 (36.5)	7.530	1	.007*
≥10 years	28 (40.6)	41 (59.4)			
Ward/Unit					
Orthopedic	44 (50.6)	43 (49.4)	0.312	1	.610
Surgery	31 (55.4)	25 (44.6)			
Terms of Employment					
Full-time	62 (53.9)	53 (46.1)		3	.122
Contract	12 (57.1)	9 (42.9)			
Part-time	1 (50.0)	1 (50.0)			
Others	0 (0.0)	5 (100.0)			

*Fischer's exact

Bivariate and multivariate analysis was done. Table 4 shows additional factors within interprofessional groups that were

statistically significant in relation to IPC included similarity (p -value 0.001), definition of responsibility (p -value 0.031),



defined rules and regulations (p-value 0.017), knowledge on responsibility (0.006), personal growth (0.031) and democratic leadership (0.026). Beyond bivariate analysis, all variables that had a $p \leq 0.05$ in bivariate analysis were subjected to

multivariable analysis using regression by ODDs ratio. This analysis brought out the number of times participants with given variables were likely to have high IPC as opposed to the others in the group.

Table 4: Multivariate Analysis of Factors Influencing IPC

Factor in Interprofessional Groups	aOR (95% CI)	p-value
Age		
<30 years	Ref	
30 - 50 years	2.33 (0.89 - 24.11)	0.067
>50 years	5.11 (2.11 - 16.11)	0.004*
Marital Status		
Single	11.32 (0.55 - 31.11)	0.115
Married	Ref	
Education Level		
College	4.04 (0.17 - 21.11)	0.389
University		
<10 years	Ref	
≥ 10 years	8.11 (5.31 - 27.19)	0.010*
Expectation Similarity		
Disagree	Ref	
Neutral	0.73 (0.04 - 12.05)	0.725
Agree	0.21 (0.01 - 0.76)	0.001*
Definition of Responsibilities		
Disagree	Ref	
Neutral	0.33 (0.21 - 3.19)	0.671
Agree	2.51 (1.24 - 6.52)	0.031*
Pre-service & CPD Training as a Precursor for IPC		
Disagree	Ref	
Neutral	3.37 (0.76 - 14.11)	0.058
Agree	2.51 (0.04 - 15.11)	0.215
Team Communication		
Disagree	Ref	
Neutral	4.31 (0.84 - 7.11)	0.843
Agree	3.70 (0.01 - 11.15)	0.687
Clinical Topics		
Disagree	Ref	
Neutral	8.21 (0.71 - 19.97)	0.075
Agree	3.31 (0.32 - 17.32)	0.113
Defined rules & Regulations		
Disagree	Ref	
Neutral	2.01 (0.78 - 7.51)	0.061
Agree	6.61 (2.15 - 22.34)	0.017*
Knowledge on Responsibilities		
Disagree		
Neutral	4.25 (0.03 - 2.51)	0.570
Agree	3.9 (1.26 - 10.66)	0.006*
Personal Growth		
Neutral	Ref	
Agree	3.05 (1.01 - 22.43)	0.031*
Acknowledgment of Contribution		
Disagree	Ref	
Neutral	0.43 (0.02 - 12.55)	0.627



Agree	3.44 (0.05 - 12.82)	0.567
Good Group Communication		
Disagree	Ref	
Neutral	0.52 (0.02 - 15.27)	0.707
Agree	7.03 (0.04 - 11.51)	0.454
Defined Leader		
Disagree	Ref	
Neutral	0.00 (0.12 - 3.173)	0.056
Agree	8.02 (0.19 - 34.79)	0.279
Democratic Leadership Style		
Disagree	Ref	
Neutral	1.30 (0.01 - 13.12)	0.921
Agree	7.81 (1.69 - 21.11)	0.026*
Leader's Influence on Activities		
Disagree	Ref	
Neutral	3.91 (0.37 - 18.11)	0.127
Agree	0.82 (0.04 - 17.79)	0.900
Participation in Decisions		
Disagree	Ref	
Neutral	0.06 (0.02 - 2.41)	0.062
Agree	0.56 (0.02 - 18.32)	0.746

DISCUSSION

This study is the first one to highlight IPC in KNH Orthopaedic and Surgical wards. Findings show that in KNH 52.4% professionals had high levels of IPC influenced by age, marital status, level of training, work experience, interprofessional group similarity, defined responsibilities, rules and regulations, knowledge on responsibilities, personal growth and democratic leadership. However, 47.6% of professionals had low IPC. Congruently, evidence indicates that IPC utilizes synergy to address human resource shortages, patient safety and patient centered care but little is documented regularly regarding interpersonal competences for successful IPC. Yet research evidence is bridging that gap. Evidence shows that enhancing collaborative leadership/power sharing, conflict resolution, functioning teams, clarified roles, patient centered care, communication, quality improvement. Contrastingly, level of complexity and context of practice were critical determinants of IPC (Bainbridge, Lasmith and Wood, 2010).

Previous evidence identifies value and ethics, roles and responsibilities, communication and teams and teamwork (Collaborative, 2023); a caring culture (Wei et al., 2020); a communicating system as opposed to silo ones (Gittel et al., 2013); sufficient resources, close proximity, and understanding (Bollen et al., 2018); conflict resolution (Vaseghi et al., 2022) and appreciation/acknowledgement (Löffler et al., 2017; Sangaleti et al., 2017) and trust and confidence (Bosch and Mansell, 2015). Self-governance and co-governance have been highlighted as a critical determinant (Folkman et al., 2019). Similar to KNH findings, a study in Ethiopia established that 43.4% of the respondents had ineffective IPC during professional activities (Degu et al., 2023).

Comparatively IPC is moderate in KNH, and likely to translate into moderate patient outcomes, unless the 47.6% gap is addressed. Also, the voice of the patient which is critical in healthcare delivery was noted missing in the current study at KNH. In Netherlands, obstetricians rated IPC with midwives, nurses and primary-care providers more positively than the three groups rating collaborations

with obstetricians. Like in KNH, professional tended to take roles that were formerly defined, except in crises situations, where professionals acted quickly to prevent gaps. However, professionals also engaged in negotiations where there were duty overlaps to overcome conflicts (Schot, Tummers and Noordegraaf, 2020). Mutual perceptions were noted with discrepancies being very clear in the isolation subscale, depicting actions like discussion of emerging new practices and respect for one another as well as in the sharing of opinions (Romijn et al., 2018). Mutuality becomes critical because further evidence indicates that IPC is valued for bridging task-related, social and professional gaps (Schot, Tummers and Noordegraaf, 2020).

Both personal and organizational factors influence IPC in KNH, including defined rules and regulations, responsibilities to reduce conflicts. This aligns with research by Zwarenstein et al (2018), which highlighted the importance of role clarity to foster IPC. Although D'Amour et al (2016) emphasises the role of communication, in KNH it was not a determinant of high IPC. Previously, education was showed to increase IPC (Koech et al., 2022). Similarly, in KNH level of education positively influenced IPC. Although the role of policies and creation of awareness were not assessed in KNH, Bollen et al (2019), underscore their critical role. Sustained IPC can be achieved through having the need to collaborate, empowerment and well thought composition of groups, identified as necessary conditions (Freeth, 2001). Policy makers must not assume that shared understanding of IPC exists and that there are no constraints, thus intentionally addressing them regularly (Reeves and Lewin, 2004).

CONCLUSION

Interprofessional collaboration needs to be fostered by managers, policy makers and professionals themselves. Factors in this study, that have positive influence on high IPC in majority of participants needs to be upheld. Practice and research gaps require regular data to be objectively addressed. Notably the voice of the patient is absent in this study and this needs to be considered in future IPC studies.

RECOMMENDATIONS

Policy makers, managers and professionals need to put more efforts to sustain high IPC in KNH while addressing the gap to foster patient outcomes.

Positive personal and organizational determinants of IPC need to be upheld. A sustained and objective rewards and sanctions system can be implemented and evaluated regularly.

Further studies on IPC using qualitative and quantitative mixed methods, patients' perspectives, external collaborators and policy aspects are proposed.



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