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INTERDISCIPLINARY COLLABORATION AMONG HEALTH PROFESSIONALS: A PANACEA FOR EFFECTIVE AND EVIDENCE BASED HEALTH CARE DELIVERY

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ABSTRACT

Introduction: Interdisciplinary collaboration (IDC) is important in health care settings as the complex nature and demands of the health care work environment requires the expertise and knowledge of differing individuals or specialists working together to solve multifaceted and complex patient care problems.

Objective: To assess the health professionals' attitude towards development of an interdisciplinary collaborative approach to patient care in health institutions and to systematically review the impact of IDC as a panacea for effective health outcomes in Nigeria.

Methodology: The research is a systematic review that provides various approaches for studying interdisciplinary teams. Fifty articles were selected from different search engines such as google, google scholar, science direct and research gate with the search term Interdisciplinary collaboration among health care professionals. Articles were arranged based on most relevant, relevant and closely related articles.

Result: The study revealed that IDC is pivotal in evidence based care and contributes immensely to effective and efficient health outcomes. It puts the patient at the center of the healthcare team's focus and allows all health professionals, with the patient, to collaboratively provide input, be part of the decision making, and improve outcomes. Although there are several obstacles to IDC, adopting this team-based culture of mutual respect and understanding is possible and, in fact, necessary.

CONCLUSION: This study reveals that there are many benefits to IDC. It can improve safety and healthcare delivery, as well as reduce costs. Inter-professional team supports patient and personnel engagement, organizational efficiency and innovation.

INTRODUCTION

Interdisciplinary Collaboration (IDC) is defined as "when multiple health workers from different professional backgrounds work together with patients, families, caregivers, and communities to deliver the highest quality of care" [1]. It is based on the concept that when providers consider each other's perspective, including that of the patient, they can deliver better care. Interdisciplinary teams are an essential aspect of modern organizational work and are an important facilitator in achieving positive, cost-effective outcomes in various organizational settings [2]. Nowhere is interdisciplinary team communication more important than in health care settings as the complex nature and demands of the health care work environment requires the expertise and knowledge of differing individuals or specialists who can work together to solve multifaceted and complex patient care problems [3].

Internationally, the development of new strategies and ways of working in the health care occupations has, over the course of a few years, led to a greater degree of inter-professional collaboration [4]. Based on a shortage of health care personnel, a growing need for services among users, new requirements and expectations in relation to service user participation and citizenship, new ways of collaboration between professions are called for. Research suggests that good inter-disciplinary communication leads to improved patient and family outcomes (high levels of patient and family satisfaction, symptom control, reductions in length of stay and hospital costs) [5]. Research has demonstrated that interdisciplinary teamwork can improve the diagnostic and prognostic abilities of health professionals, more than individual health professionals working alone [6]. In recent years there have been significant advances in the development of technologies that support teamwork. However, unlike other domains of practice where teams work is based on complex problems, team work in health care is more varied as a patient's medical condition(s) may vary in severity, complexity and uniqueness [4]. Furthermore, team work in healthcare is often the norm and not the exception as there is a need to solve complex patient problems on a daily basis. From a technological perspective developing technologies that support such complex and unique work can be difficult.

To provide proper care and improve patient outcomes, health care professionals must collaborate effectively with members of the healthcare team from other disciplines [7]. That means working together as team members and team leaders. To do that, they must understand each member's education, scope of practice, and areas of expertise. Learning the language, norms, and special foci of other disciplines fosters more effective use of resources and knowledge [8].

Teams can also work together to develop health promotion for diverse communities and instill disease prevention behaviors amongst patients [8]. Recent studies show that higher inter-professional team functioning is associated with better patient outcomes and cost savings. Teams offer the potential to achieve more than any person could achieve working alone; yet, particularly in teams that span professional boundaries, it is critical to capitalize on the variety of knowledge, skills, and abilities available [9].

The practice of patient care by interdisciplinary teams is particularly important in specialized health care settings such as palliative care. Current research suggests approximately 70% of deaths in North America are due to chronic illness [10].

In many countries, interdisciplinary care plans are created using input from multiple disciplines, including physicians, nurses, pharmacists, Radiographers, Physiotherapist, medical laboratory scientist, case managers, and others [11]. In Norway, inter-disciplinary collaboration between health and social care personnel has been an important health political priority. A number of different means can be used to reach these health political overall goals [8].

Research shows that interdisciplinary care plans are beneficial not only for each patient, but also for healthcare team members included in planning care. But this practice isn't without its challenges. Overcoming these difficulties takes commitment and focus on improving the patient care experience as much as possible [12]. Historically, IDC education was not included in the curricula for healthcare professionals. Instead, students preparing for each discipline were educated in isolation from students of other disciplines, and there was little knowledge of the educational requirements or scopes of practice of other health professions. Today, students are being prepared to be members of an interdisciplinary healthcare team and are learning to focus on each patient as an individual, rather than a treatment or diagnosis [12].

Benefits of IDC collaboration for healthcare professionals, and patients include improved patient outcomes, fewer preventable errors, reduced healthcare costs, and improved relationships with other disciplines. Enhanced communication among disciplines also leads to decreased workloads for all health professionals by minimizing duplicated effort and increasing knowledge. Building relationships with professionals in other disciplines leads to better understanding [13].

However, it's important to keep in mind that each team member has their own unique set of skills and treatment goals for each patient based on varying degrees of education and experience. Interpersonal differences or variations in level of expertise can make it easy for one member of the group to try to override other members [14]. If necessary, formal training in effective communication techniques that enhance IDC should be provided to all team members, regardless of their position within your organization. Successful implementation of interdisciplinary care plans requires clear definition of each provider's responsibilities, respect among the group, and transparency among providers sharing information about a specific patient. It can be helpful to select a leader, like a clinical team facilitator, to help make multidisciplinary discussions productive [12].

Leaders help bring more structure to care planning meetings by identifying goals for the discussion, encouraging participation from each team member, and probing for more information about the patient when necessary [12]. Defining the objectives of interdisciplinary meetings, along with specific patient goals and intended outcomes, is essential for creating a plan of care that meets the needs of the patient while incorporating feedback from the entire multidisciplinary team. It is imperative that health professionals from a variety of disciplines should work together to deliver the best possible healthcare services to all Nigerians and all members of the team are equally valuable and essential to the smooth running of hospitals.

Team work in health care involves interaction among health professionals who work interdependently to provide a given type of care [19]. The need for team working and collaboration in health care delivery for the purpose of improving patient outcomes has been a major area of research in the last two decades. Team working has been shown to be desirable for achieving quality outcomes in health services through facilitation of information flow and coordination and provision of health care within the increasing diversity of disciplines in health care. This agrees with works by Lyndon and Angella, (2017) [8]. In Nigeria, anecdotal evidence shows that clinical services are often organized along strict professional lines and teams are formed by and within individual professions independent of one another. Interdisciplinary team working could facilitate the efficient provision and coordination of increasingly diverse health services, thereby improving the quality of patient care [20]. Consultant-led obstetrics and gynecology teams (units), for instance, are made up of doctors only and deliver services along strict professional lines. Nursing care is often organized according to wards and clinics, and complements the medical care in those wards and clinics. Similarly, pharmacy and laboratory services function almost completely independently. Collaboration among these groups occurs only to the extent that each group carries out its functions to permit patient care to proceed in a coordinated fashion. A semblance of multi-professional teams can be found only in high dependency units such as accident and emergency departments, labor wards, intensive care units, and newborn special care units The objectives of this review is assess the impact of IDC as a panacea for effective health care delivery in Nigeria and to suggest the imperatives of IDC in achieving and sustaining a well formidable health care team and to explore better ways for effective and efficient coordination and collaboration among health care professional.

Methodology

Fifty articles were selected from google scholar, Research gate, Science Direct, Medline, HINARI, Medknow and African Journal online (AJOL) with search terms Interdisciplinary collaboration and Multidisciplinary collaboration among health care professionals. Relevant and related literatures were searched from different search engines such as goggle, google scholar, science direct and research gate. Articles were arranged based on most relevant articles, relevant articles and closely related articles. We have also illustrated the complexity of communication in interdisciplinary settings. Although communication is often used as a general term there are times when it in fact means something more specific. For example communication can serve as a social fabric across both internal and external team members. This paper will make useful contributions to the

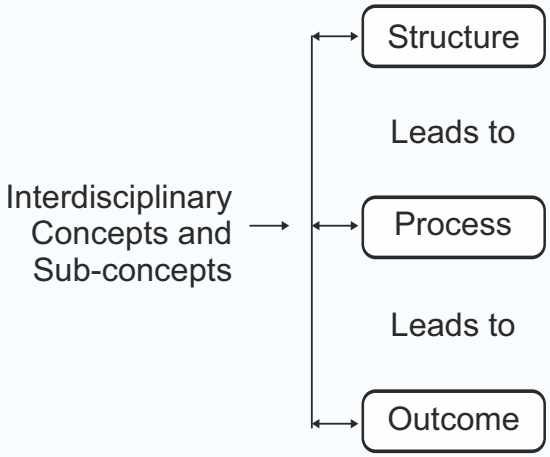
research and design of HIS to support team practices. From a research perspective we have further illustrated the value of qualitative based methods such as ethnography and content analysis for understanding the intricate processes that take place during healthcare delivery. From a systems design perspective we discussed how electronic data support, electronic process facilitation and video or web conferencing could be used to support 'e-teams'.

Theories and Models of Interdisciplinary Collaboration

Donabedian's framework

Multi-professional team working has been classified into three major types, each of which has its own characteristics related to the amount and type of collaboration among team members. These include multidisciplinary, interdisciplinary, and transdisciplinary team working (Choi and Pak, 2016). Research team has a diverse, multidisciplinary background (Radiography, Medical imaging, health informatics, social work, medicine and nursing). That diversity provided a multidisciplinary approach when coding the data and led to greater attention to a range of issues such as how social dynamics impact teams, how the information needs of care providers (Nurses, Physiotherapists, Radiographers, counselors and physicians) differ, and how information is communicated amongst the differing team members.

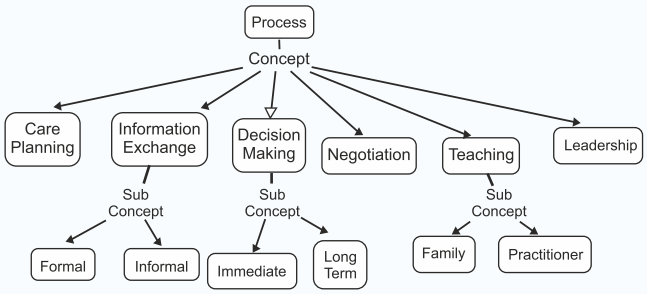
Donabedian's framework with two way arrows illustrating cross concept emergence during team discussions, such as identifying an outcome that leads to a structure.



(Source: Reddy and Spence, 2008) [13]
Figure 1 : Donabedian's framework with two way arrows illustrating connectivity between the three dimensions.

Processes

We identified six team processes that were key aspects of communication: care planning, information exchange, teaching, decision making, negotiation, and leadership. Care planning, information exchange, decision making and teaching are primary processes while negotiation and leadership are supporting processes that take place in conjunction with other processes (Orchard *et al.,* 2012).



(Source: Reddy and Spence, 2008) [13]

Figure 3 shows the ontology of concepts and sub-concepts for team processes. Each of the six team processes are defined and discussed below.

Ontology of concepts and sub-concepts for the processes of interdisciplinary team communication.

Care Planning*:* is a common task in healthcare and refers to the need to ensure all aspects of patient care are addressed and followed. However care planning by interdisciplinary teams presents an added level of complexity as it requires input from both internal and external team members such as was illustrated in figure 3 above. Furthermore, care planning includes not only medical planning (such as orders for prescriptions or laboratory testing), but also non-medical planning such as coordination with social services. For example, one patient case in our data involved a physician coordinating with social services because a patient was unable to work because of her illness and the patient's government sponsored benefits were about to cease. The physician had to write a letter in order for the patient to receive financial and social support from the government because of her inability to work due to illness.

Part of care planning is coordinating the patient's care using multiple members of the care team. A key aspect of care coordination involves ensuring that all the roles and responsibilities of each team member are clearly defined so no team member assumes the roles and responsibilities of another

team member, or that a task is not completed because the team members believe each other is responsible for completing the task [13].

Information exchange: can be defined as the process by which team members interact with one another during team meetings. Information exchange can be formal and involve explicit or implicit forms of information technology [15]. For example, formal exchange may involve discussing potential patient treatment options with other members of the interdisciplinary team. It may also be informal such as discussing organizational policies or other topics of interest with the team. In our study informal discussion usually took place before the team meeting or in-between discussions about patient cases. Team dynamics have been described as a valuable part of interdisciplinary teams and we noted informal exchanges were supportive of interdisciplinary team dynamics. Team members who gathered together to participate in interdisciplinary team meetings often had informal discussions in order to exchange organizational information and to discuss organizational issues that might impact upon team activities aimed at managing patient care.

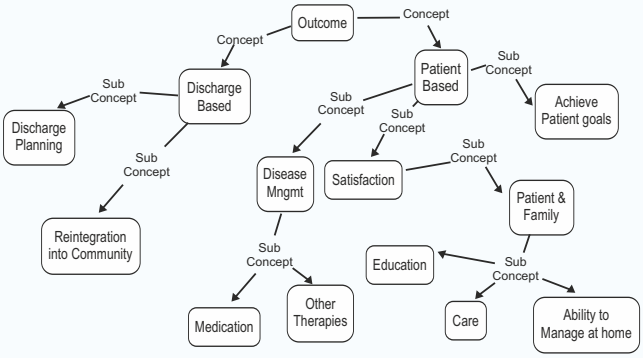
Team leadership: also emerged from the transcript data as a supporting process to various processes, particularly decision making and teaching. Interdisciplinary team leaders play key role in facilitating decision making and the exchange of information. In team meetings, where there was no clear team leader, the team often lapsed into random conversation, losing its focus (their focus drifted away from the patient being discussed). However, in cases where leadership was present, the team leader facilitated and focused team discussion upon the patient being discussed [6].

Evolutions of Team Approach

- Consultative approach – one practitioner retains central responsibility and consults with others as needed
- Multidisciplinary – each team member implements a specialized part of a care plan
- Interdisciplinary – each team members put forth their knowledge individually and collectively to the care plan
- Trans-disciplinary – members are jointly responsible for implementing an integrated plan

Outcomes

We identified five team outcomes that were influenced by communication: patient discharge planning, the reintegration of the patient into community, effective disease management, patient and family satisfaction and patient achievement of goals and objectives. The outcomes were grouped into two categories: discharge based outcomes and patient based outcomes. Figure 4 provides the ontology of concepts and sub concepts for interdisciplinary team outcomes showing the grouping of the two aforementioned categories.



(Source: Reddy and Spence, 2008) [13]

Figure 4: **Ontology of concepts and sub-concepts for the outcomes of interdisciplinary team communication.**

Discharge Based Outcomes

Although patients are routinely discharged from hospitals or care centers, the discharge of patients receiving complex care such as palliative care requires significant coordination across the team members. As the two discharge outcome sub concepts illustrate, not only does discharge require communication across team members to ensure all requisite tasks are done to facilitate patient safety but it can also involve initiating external contacts to help patients reintegrate into their community [16].

Discharge planning

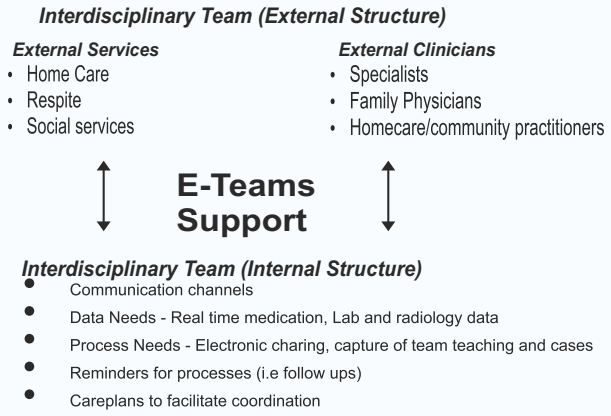
Discharge Planning was particularly important for the inpatient hospice patients in our study. Discharge planning of hospice patients involved significant teamwork that required much communication and coordination across a number of individuals from the team. The team had to attend to a number of patient care issues in order to effectively plan the safe discharge of the patient [16].

Interdisciplinary Team Communication Framework

Figure 5 provides a summary of the results in the form of an interdisciplinary team communication framework based on the three meta-concepts from Donabedian (structure, process and outcome). The framework can be used for assessing interdisciplinary teams by drawing attention to the range of factors that need to be considered for interdisciplinary teamwork and considering those factors in the context of the specific examples. Not all concepts have sub-concepts and such instances are portrayed with a gray box [16].

Implications for 'e-Teams' Systems Design

We see two key issues from the results we have presented in this paper. First is coordinating the negotiation of interdisciplinary team healthcare delivery and second is organizing and mediating the coordination process itself. Drawing upon the framework presented in the previous section we have developed a model for health information systems (HIS) design to support 'e-teams'. Figure 6 shows the 'e-teams' model and how it is based on the need to provide electronic support for both the internal and external structures of the team as well as the processes that take place within those structures. The e-teams model is a means of connecting the internal and external structures to a process facilitation tool (video conferencing, electronic patient record) in order to enhance team outcomes. The e-teams model is a preliminary model that is meant to provide insights as to the opportunities and challenges of designing a HIS to support interdisciplinary teams for palliative care delivery [10].



(Source: Choi and Pak, 2016) [10]

Figure 6: e-teams support to facilitate interdisciplinary team communication between both internal and external structures.

Three specific types of e-team supports necessary for effective team practices were identified. The three supports are: data support, process facilitation, and video or web conferencing. Drawing upon the results from this paper we briefly discuss each type of e-team support and the challenges of implementing each support. Although research exists on each of those three types of support the literature has not specifically explored them in the context of interdisciplinary palliative care teams. Further we emphasize that solving the complexities of interdisciplinary based care requires more than just technological solutions. Rather the work processes that teams engage in must be understood and coordinated in the context of the technology being used.

Electronic Data Support

Accurate up-to-date data is crucial for decision making. However in complex interdisciplinary care the access and sharing of data can be problematic because there is often for multiple care providers. The patient's medical records, which are largely paper based, may be transferred across different settings and updated frequently within those different settings (Procter and Currie, 2014). Therefore, when the interdisciplinary team meets they may be making decisions with inaccurate or incomplete data. Indeed our analysis showed several examples where team members would question whether data such as a medication dose was accurate or whether a patient had been seen by a specialist they were referred to.

Electronic Process Facilitation

Specifically, care planning and team teaching are examples of processes that can facilitated through the use of a health information system (i.e. electronic record). In our results we described the process of team teaching and how it makes a valuable contribution to team meetings by drawing on the differing expertise of team members [14]. Decisions made by interdisciplinary palliative care teams are complex and incorporate experience, opinion and ethics. In the team teaching section we described how a medical oncologist introduced a concept called chemo brain that was used by the team as part of a patient case. However, because the team's composition is dynamic (health professional membership may change from week to week and individual team members may change), team members and the expertise they bring with them is not static. Ideally, it would be valuable to capture team teaching electronically to develop a

knowledge base of team teachings that would provide knowledge that could be used in future team meetings. Such knowledge could be used as a form of decision support or as an educational tool by teams during weekly patient care meetings [14]. Another process that could be enhanced electronically is care planning. Existing tools like electronic checklists and reminders of pending tasks would enhance task completion. However a challenge is that team tasks need to be coordinated in order to use such tools to their full advantage.

The Promise and Challenge of Team-Based Cross-Disciplinary Collaboration in Health Care

Across health care, there is an increasing reliance on teams from a variety of specialties (nursing, physician specialties, physical therapy, and social work) to care for patients. At the same time, medical error is estimated to be "the third most common cause of death in the United States of America, and teamwork failures (failures in communication) account for up to 70-80 percent of serious medical errors [1]. The shift t*o* providing care in teams is well founded given the potential for improved performance that comes with teamwork , but, as demonstrated by these grave statistics, teamwork does not come without challenges. Consequently, there is a critical need for health care professionals, particularly those in leadership roles, to consider strategies for improving team-based approaches to providing quality patient care.

Teams offer the promise to improve clinical care because they can aggregate, modify, combine, and apply a greater amount and variety of knowledge in order to make decisions, solve problems, generate ideas, and execute tasks more effectively and efficiently than any individual working alone. Given this potential, a multidisciplinary team of health care professionals could ideally work together to determine diagnoses, develop care plans, conduct procedures, provide appropriate follow up, and generally provide quality care for patients.

Yet we know that, overall, teams are fraught with failures to utilize their diverse set of knowledge, skills, and abilities and to perform as well as they could (Larson , 2010). The potentially harmful consequences for patients cannot be ignored. Poor teamwork such as incomplete communication and failing to use available expertise increases the risk of medical error and decreases quality of care [17].

Collective Intelligence

In research and practice, a common belief is that teamwork is best when the team has the best—that is, the smartest people; yet recent research challenges this assumption. Following methods used in psychology to study individual intelligence investigated the possibility of a collective intelligence factor: a latent factor describing a team's general ability to perform on a wide variety of tasks [7]. The speculation is that members who pick up on a wider variety of subtle cues, and teams that operate in a manner that incorporates multiple perspectives, will operate with more and better information than they would otherwise. These patterns of interaction among team members allow teams to make good use of members' expertise a key reason teams could be effective in health care but capitalizing on a team's collective expertise is surprisingly difficult.

Expertise Use

The process of expertise use in teams is multifaceted. Team members must first share relevant knowledge (i.e., knowledge about the task at hand) with others, and, second, that voiced knowledge must impact the team's work. The communication processes of speaking up and influencing others both come with challenges [6]. In addition to gathering the right people on a team, those with relevant knowledge must speak up if their expertise is to be used effectively by the team. One obstacle is that members may not realize they have information worth sharing. For example, research on "the common knowledge effect" highlights the tendency for team members to focus on knowledge that is already commonly shared among group members. This is an effect based in simple probability: if all group members know a piece of information, for example an attribute of a job candidate, that information is more likely to be mentioned during a group discussion than information known by only one member. As a result, uniquely held, important knowledge could go unspoken because members are less likely to think of it. Additionally, some evidence suggests that stereotypes about a social group's expertise can lead team members to incorrectly assess their own knowledge relative to that of others. For example, women who have deep knowledge about cars (reflecting a mismatch between the gender of the expert and the stereotype of that gender's knowledge) may incorrectly assume they do not know as much about cars as a man, while a man

may incorrectly assume he knows more about cars than the knowledgeable woman. This can limit the likelihood that all relevant knowledge is voiced. For example, a nurse might believe physicians have more knowledge about a particular clinical treatment (because physicians typically are knowledgeable about treatments) and remain quiet, when in fact the nurse has important information about how the patient has been responding to that treatment. In this way, cognitive biases triggered by a group's composition as well as the common knowledge effect can lead people to withhold knowledge because they do not realize they have relevant and unique knowledge to contribute [6].

Psychological safety, which suggests "a sense of confidence that the team will not embarrass, reject, or punish someone for speaking up" is another factor affecting the likelihood of speaking up. A lack of psychological safety, which often comes from being in lower status roles or professions, can lead team members to avoid speaking up even when they know they have something to contribute [18].

The need for all medical and health professions trainees to understand how to work across disciplinary boundaries is noteworthy, given that the stakes are high and that working together effectively requires more than simply ensuring that team members are smart people. Team members, especially those in leadership positions or with higher status, should actively invite input to ensure that team members voice all of their information. They should also be role models in expressing appreciation for diverse knowledge from all sources to ensure that team members' input regardless of who the team member are will be considered and used in the team's work. Such teams will be well suited to capitalize on their expertise, avoid errors, and provide effective patient care [18].

Discussion

While the literature on multi-professional collaboration in health care has steadily increased in North America and Europe, and multi-professional collaboration has been promoted by the World Health Organization (WHO), little is known about collaborative models of health care in Africa where team working is necessary, among other benefits, to address perennial challenges such as staff shortages and inter-professional conflicts in the health sector [7].

The results from this paper suggest possible contributions to the research and design of HIS to support team practices. From a research perspective we have further illustrated the value of qualitative based methods such as ethnography and content analysis for understanding the intricate processes that takes place during healthcare delivery. Team processes that we observed and subsequently included in our interdisciplinary team communication framework such as team teaching and information exchange might be viewed as informal processes as compared to decision making yet the informal processes were an important part of team functioning and dynamics [20]. From a systems design perspective Electronic data support, electronic process facilitation and video or web conferencing could be used to support 'e-teams'. The e-teams model is different from standard hospital or web based systems in that it is designed to support specific team structures and processes such as web or videoconferencing to connect internal and external team structures, facilitation of team processes such as teaching and care planning, and providing reminders and alerts to ensure completion of team tasks. The e-teams model could also enhance health outcomes in a measurable way. Although interdisciplinary teams are advocated as improving patient and family outcomes there are few studies that provide empirical evidence to support that claim [4]. By collecting data on team based processes and outcomes we were able to analyze metrics such as resource utilization by teams and patient and family satisfaction with team based care delivery. Finally, we emphasize that HIS design to support e-teams is not just applying technological tools into team meetings but rather it requires an understanding of the specific processes teams engage in and the coordination needed to support those processes [4].

Internationally, the development of new strategies and ways of working in the health care occupations has, over the course of a few years, led to a greater degree of inter-professional collaboration. Based on a shortage of health care personnel, a growing need for services among users, new requirements and expectations in relation to service user participation and citizenship, new ways of collaboration between professions are called for. ([8]. As early as 2010, the Framework for Action on Inter-professional Education and Collaborative Practice, WHO described inter-professional collaboration as an innovative way of meeting the complex service needs of the future. Adequate and effective leadership is essential to addressing such needs [7].

Studies show that social educators and nurses are involved in ongoing negotiations on the division of labor in interdisciplinary settings [15 &18].These studies point to a need for clearer leadership and managerial anchoring, and systematic reflection on tasks that can be taken care of by different professions.

Current inter-professional relationships among health workers

In a study conducted by Chukwuemeka *et al.* 2015, approximately 74% of respondents were of the opinion that existing arrangements that emphasized strict professional boundaries in the formation and functioning of clinical service units in the different health professions inadvertently promoted professional segregation and rivalry. Approximately 78% (91/116) believed that inter-professional conflicts/rivalry hinders delivery of medical care in the study centers; this opinion was expressed by 66% of consultants, 83% of senior registrars, 79% of registrars, and 76% of senior house officers. Approximately 55.2% (64/116) of respondents had observed inter-professional conflicts in their work places. The commonest sources of conflict were assertion of professional boundaries (48.3%, 56/116), superiority (36.2%, 42/116), accusation of incompetence (30.2%, 35/116), and accusation of irresponsibility (18.9%, 22/116). The most common inter-professional conflict/rivalry identified was between doctors and other health workers [20].

Awareness and knowledge of interdisciplinary team working

From responses of participants to questions on knowledge of and attitude to inter-professional team working, approximately 74.1% (86/116) of respondents stated that they were aware of the concept of interdisciplinary team working, with 15% of these having very good knowledge, 35% having good knowledge, and 29% having poor knowledge. Approximately 37% (32/86) of respondents who were aware of team working reported received formal teaching/training on multi-professional team working in the course of their professional development [20].

Attitude to inter-professional team working

Approximately 71% (61/86) of the respondents believed that medical care would be best delivered by interdisciplinary teams, and 74.1% (64/86) felt that inter-professional team working was feasible in Nigeria. Seventy-three percent (63/86) felt that interdisciplinary team working would be necessary for the development and functioning of subspecialty units in obstetrics and gynecology at Nigerian hospitals. Approximately 77.6% (67/86) of respondents who were aware of team working believed that interdisciplinary teams would be useful in obstetrics and gynecology practice in Nigeria, with 89% of these (60/67) rating its prospects as very useful [20].Interdisciplinary team working because other types of multi-professional team working may not be suitable for our environment given our level of socioeconomic development. Multidisciplinary team working does not allow sufficient collaboration to tap the expertise of different professions, while the blurring of professional boundaries in transdisciplinary team working may require higher than existing levels of professional discipline and control in our society.

Our results show a high level of awareness of inter-professional team working among respondents. However, this did not translate into a high level of knowledge of the meaning of the concept of inter-professional team working. The results suggest that awareness was not based on a deep understanding of the meaning and content of inter-professional team working. This may not be surprising considering that a much smaller proportion of respondents had been exposed to formal teaching or training on inter-professional team working. Therefore, this study suggests that there might be a need for theoretical training of health workers on interdisciplinary team working in the study centers. Anecdotal evidence suggests that team working is not taught in medical or nursing schools in Nigeria, unlike in Europe, the UK, and the USA. While changes in the curricula of Nigerian medical schools might need to include team working, short-term measures, such as workshops and update courses, could be organized for health workers to include topics on inter-professional team working [12,15 &20].

Meanwhile, a very high proportion of respondents agreed that inter-professional rivalry was an important feature of patient care in the two departments studied. This may mirror the situation of medical practice in the entire country, given a previous study showing that the recent industrial disputes in the Nigeria health sector had been instigated by struggles between doctors and other health professionals for leadership of the health team. A high proportion of respondents in this study expressed the opinion that the current method of organizing clinical units in the different

professions promoted unnecessary professional segregation and fanned rivalry. Such rivalries should be a matter for serious concern for two reasons. First, although they may still allow work in hospitals to proceed in a coordinated way, fractious relationships arising from them may delay the processes of care. Secondly, they could engender an unfriendly working environment, which could impair the efficiency of individual health workers as well as that of the system itself The limitations of this study include the use of a single profession and one department in each hospital, which limits the external validity of our results. Although qualitative studies should have been able to explore the opinions of respondents in greater detail, use of anonymized self- administered questionnaires enabled the respondents to express their opinions freely without bias. No formal psychometric analysis of the questionnaire was undertaken, but the ability of the questionnaire to elicit correct responses from respondents was ensured by pretesting and modification of the final version based on the results of the pretest [20].

Our results suggest that respondents acknowledged the need to begin to think about promoting professional collaboration in order to improve patient care in our hospitals. Our results also show that there was a significant desire for team working by doctors in the obstetrics and gynecology departments of the study centers. This was associated with a strongly positive attitude toward interdisciplinary team working. This finding suggests that the attitudes of doctors may not be an impediment to the establishment and implementation of collaborative inter-professional team working in this area. This finding is important, given the dominant position of doctors in public hospital services. Curriculum developers should explore ways of increasing inter-professional education among the different health professions in Nigeria in order to expose potential entrants into the professions to collaborative relationships early in their careers. The usefulness of inter-professional education in promoting and facilitating interdisciplinary team working has been extensively explored in the literature [11].

What Are the Barriers to IPC?

It is clear that creating IPC is not easy. Many influential factors affect relationship with one another among health professionals. Although data are starting to emerge showing the value of team-based care, there are many obstacles to its implementation. Some of these include reimbursement, the culture of health care, and lack of information and role models [4].

Culture of health care

The traditional culture of healthcare training and practice has been to work in silos. Professionals are not used to working collaboratively across disciplines. One study of a large urban teaching hospital showed that nurses and physicians caring for the same patients often could not identify each other and often had different priorities for them, suggesting that coordination of care was "less than optimal."[16].

Despite the significant impact that IPC can have on the health system, it remains a fairly new concept. There are national organizations which evaluate and promote best practices for IPC, but what works in one healthcare setting does not necessarily apply to another. This series is designed to address this issue by providing concrete ideas regarding how to make IPC work at a local level.

Where Can IPC Work?

Inter Professional Collaboration (IPC) may be effective in a variety of healthcare settings. The preliminary work on IPC was performed in high-intensity areas such as the operating room and intensive care unit. We have seen it successfully implemented in transplant teams, hospice, and rehabilitation Robbins *et al*., 2012) [16]. Further practice and research have expanded IPC to the outpatient clinic, pharmacy, and even community sites.

CONCLUSION

This study reveals that there are many benefits to IDC. It can improve safety and healthcare delivery, as well as reduce costs. It puts the patient at the center of the healthcare team's focus and allows all health professionals, with the patient, to collaboratively provide input, be part of the decision making, and improve outcomes. Although there are several obstacles to IDC, adopting this team-based culture of mutual respect and understanding is possible and, in fact, necessary. The practice of interdisciplinary teamwork is particularly important in specialized health care settings. In this research work, we identified interdisciplinary team structures, processes and outcomes and presented an interdisciplinary team communication framework that discussed HIS design to support e-teams.

Finally the study showed that a collaborative, inter-

professional team supports high quality and safe care, patient and personnel engagement, organizational efficiency and innovation.

RECOMMENDATIONS

The study suggests that providing physical and structural opportunities and a psychologically supportive environment and appropriate education and training are all important to promoting collaborative practice. The government needs to provide incentives for all health care professionals which will serve as motivation to encourage effective team work and boost inter- professional harmony. The Associations and Unions of various health professions should create awareness on the need to encourage good practice and professional collaboration for the benefit of the patient and staff.

The management should source for training opportunities for health care professionals and should encourage commitment to duties and provide a means for rewarding those that promote collaboration among professionals.

Implication of the Study

This study suggests that there might be a need for theoretical training of health workers on interdisciplinary team working in the study centers. Anecdotal evidence suggests that team working is not taught in various departments in medical or nursing schools in Nigeria, unlike in Europe, the UK, and the USA. While changes in the curricula of Nigerian medical schools might need to include team working, short-term measures, such as workshops and update courses, could be organized for health workers to include topics on inter-professional team working.

Limitations of the study

Limitations of our study include the fact it was a preliminary study and a systematic review, which may limit the generalizability of the results. The framework needs to be validated and studied in the context of other team based settings. Our rationale was that team meetings act as the starting point for interdisciplinary team activities and is the place where team member tasks are identified. However the team communication framework and e-teams systems model provides a starting point for further research of teams and domains of health and other industries such as production management or engineering. Future work will entail seeing the extent the findings from this study transfer to other settings and fully developing and testing the e-teams model in different interdisciplinary team settings.

Conflict of interest: Nil

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