Advancement of Collaborative Technologies in Health and Wellness

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ARTICLE INFO	ABSTRACT
Published online: 28 June 2022	The emergence of digital solutions such as collaborative technologies have presented prominent positive aspects of how these digital innovations can lead to an improved integration of care by means of information channels and deliver healthcare that is more effective, efficient, targeted and person-centred and also reduce errors and the length of hospitalization in the health facilities. **Aim:** To assess the advancement of collaborative technologies in health and wellness in the St. Patrick's Hospital at Offinso, in the Offinso South Municipality of Ashanti region of Ghana. **Methodology**: The study is a descriptive study and it employed a quantitative approach using semi-structured questionnaire designed using google form to collect the data online. The research population for this study consists of staff from the various departments at the hospital comprising the managers, heads of department and health professionals (end users) which included doctors, pharmacist, records officers, laboratory technicians, administrative and IT staff and all others who used the system in the health facility. **Result:** The study revealed that there is high cost of acquisition of collaborative technologies especially at the initial stage. Also, the study results show that unwillingness of team members to collaborate is a challenge to the use of collaborative technologies. **Conclusion:** The expectation of Collaborative technologies at St. Patrick's Hospital have been met and the use of collaborative technologies has been very beneficial to the staff especially those who use them often.
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I. INTRODUCTION

Collaborative technologies are the combination of online software that makes it possible for real-time communication between a group of individuals and teams irrespective of their locations.

Collaborative technologies (CT) enable organizations to quickly converge remote workers into virtual teams to undertake different tasks

Organizations and employees from different geographical areas can connect with one another, share their information, and work on tasks at their convenience. Collaborative technologies involve the use of the Internet or some other technologies to share information. These collaborative technologies have the potency to remove face-to-face interaction and can enhance productivity when correctly implemented.

All the employees that collaborating need to be familiar with these technologies and develop some skill necessary to use these technologies [1].

The expenditure of governments on health and long-term care has been on the increase for most countries, especially in Africa, and is expected to rise even further. This accounted for 8.5% of GDP in 2015 and is estimated to reach up to about 12.5% of GDP in 2060 [2].

A substantial aspect of this increment is due to the funding and introduction of health care technologies which include digital ones.

This study, therefore, assesses the advancement of collaborative technologies in wellness in the St Patrick's Hospital in the Offinso Municipality.

The outcomes of this study will be applicable to the health facility that was chosen for the study as well as other health institutions in general. It can assist hospitals and other health institutions examine their adoption of technology and in particular assess the restrictions that militate against it[1]. The study's findings will also be useful to the Ministry of Health, Ghana Health Services, and other organizations in Ghana with oversight responsibilities for healthcare administration. Based on the study's results, they might reconsider some of the strategic problems surrounding the adoption and restrictions of collaborative technologies in the country. Finally, the study will be useful to future researchers since it will provide background material for future studies on the issue. This is especially significant because collaborative technologies are still in their infancy in the nation, and hence additional researchers will benefit from the study.

The study focused mainly on collaborative technologies its benefits and challenges in the St. Patrick's Hospital in the Offinso Municipality in the Ashanti Region. The data used for the study was therefore limited to the hospital only and no other hospital in the Municipality.

II. LITERATURE REVIEW
1) Evolution and Nature of Health Technologies Adoption

The advancement of ICT has had an amazing change in society not simply in its method of directing business or interacting but additionally similarly in its method of offering healthcare services. ICT has been significant in healthcare delivery around the globe and is generally known as electronic health (eHealth).

As indicated by the [3] the omnipresence of eHealth is confirmed by achievements in Telemedicine networks in Bangladesh the e-pharmacy project in Malaysia electronic web-based communication to reduce maternal and child death in Peru among others. For practical reasons eHealth has been adopted in many hospitals because of the sheer quantum of data created by the medical services institutions. A visit to the records division of any medical clinic will make one welcome the significance of conveying for example zoom conferencing to spare space recovery time and general availability of data. The basic requirements to streamline the medical services delivery system and set it applicable to current expectations have controlled such various public activities including the making of a collaborative conferencing system in Australia connecting inter-operable health information technology in the United States and the improving of a solitary tool for each person in the United Kingdom [3].

Video conferencing is an information and communication technology (ICT) expert system that delivers real-time visual and audio for teleconsultation telemedical education peer consultation patient education and healthcare delivery. [4] [5] Formalized paraphrase Video conferencing technologies, such as live surgical demonstrations for surgeon education from one or more locations, make it simpler for surgeons to participate in continuing learning [6] [7]. Today, video conferencing is a knowledge-sharing tool that gives an excellent opportunity to learn firsthand about surgical procedures [8] [9]. Surgery with Video Conferencing technology provides surgeons with complete information about the patient's anatomy. Real-time discussions between surgeons and specialists during surgical demonstrations are a quality step toward a successful learning process, especially when new information assistance is most beneficial when learning occurs in crucial conditions [10].

According to [11] [10], a functional approach in evaluating Video Conferencing for acquiring intricate medical knowledge live surgical demonstrations by Ortho One Hospital Knee program conducted in October 2012 was studied using attributes involved in Knowledge acquisition using Video Conferencing through Learning Process. Quality of Presentation (Content and Technical) and Improvement Opportunities and discovered that a suitable utilization of Video Conferencing technology for medical knowledge updating was noticed. Concerns about using technology at work and in remote places were expressed, as well as an acknowledgement of the necessity to refresh knowledge base in using Video Conferencing for getting sophisticated medical information. Video conferencing was discovered to be a simple method for learning new surgical procedures and best practices.

2) Electronic Health in Ghana

In an extensive overview of ICT and health informatics in Ghana [4] sees that eHealth is at its undeveloped stage in Ghana. Likewise he noted that few pilot ventures are being run at different hospitals to learn the possibility of eHealth in the nation.

After a cautious examination of the current situation with Health Management Information System (HMIS) [4] derives that its essential structure blocks are set up in certain hospitals in Ghana especially the teaching hospitals. These essential structure blocks are as per the following:

- HMIS Strategic Plan
- Policy and Legal structure for reporting health information
- Medical records policy
- Framework for a focal information depository
- Digital District HMIS
- The establishment of a Center for Health Information at the focal level

[5] argued that although HMIS is effectively used in certain hospitals diverse programming is being utilized

by different hospitals in the nation in their quest for electronic information passage handling and delivery.

3) Health Technologies

The 'digital transformation of health services' is seen as a significant and compelling process that has already had a large impact on present medical services and health systems and is expected to have an even greater future impact on healthcare and medical service deployment. It is additionally quickly recognized that the advanced change of health management is an intricate and multifaceted issue [2].

Digitalization is the utilization of collaborative technologies concerning the creation and delivery of products and services. Such collaborative technologies enable healthcare services to be organized, manufactured, and delivered in novel ways. Digitalization, ranging from the use of computers and electronic health records to home testing of patients, electronic clinical gadgets, and the use of computer-aided visualization and decision support systems, has influenced and will continue to influence numerous aspects of medical services frameworks in terms of structure culture callings therapies and outcomes.

4) Types of Collaborative Technologies in Healthcare

In this study, digital health services include a wide range of services with many (overlapping) titles, including as email conferencing tools chat rooms blogs forums wiki etc. Recently [2]established a categorization of digital services by categorizing them into four groups depending on the primary customers of the services.

2.4.1 Email and texting

Many people consider email to be the major successful collaborative technology tool [14] [15]. One of the cornerstones of email's success is that it is now application-independent, and with attachments, it is a simple method to exchange numerous items that the receiver may access and read for comprehension. People, like other types of technology, use email for purposes other than what it was designed for.

Instant Messaging (IM), which largely includes sharing SMS messages with other persons or groups, has had a huge influence in enterprises. In certain circumstances, it has replaced the usage of email, face-to-face meetings, and phone calls. [16].

Except for the attachments (which can contain detailed drawings, figures, and video clips), all of them are text-based, and even thin text in the short world of texting. Text remains a limited medium when compared to the tones and facial/body emotions available while speaking face-to-face.

2.4.2 Conferencing tools: Voice and Video

Numerous individuals have phones these days from which they can video chat at any rate on a limited scale. Associations regularly offer types of assistance for bigger scope sound "spans" for phone calls. The difference between "full-duplex" and "half-duplex" transmissions is critical to the proper execution of these calls. Half-duplex lines are only capable of transmitting one heading at a time.

The tone of voice can lend significance to the words said, while facial expressions and nonverbal communication provide another dimension.

The visual link must be physically masterminded in order to achieve a good sensation of presence. In the video as in real life individuals will in general zero in on the essence of the individual they are chatting with and endeavour to visually connect by taking a look at the eyes of the individual.

There are more recent tools, such as GoToMeeting Zoom Google Hangout and Skype screen sharing, that allow someone to share their work area or a single window with others, allowing them to manage what others are looking at and having the opportunity to concentrate attention by employing the mouse or pointer. There are more recent tools, such as GoToMeeting Zoom Google Hangout and Skype screen sharing, that allow someone to share their work area or a single window with others, allowing them to manage what others are looking at and having the opportunity to concentrate attention by employing the mouse or pointer.

Zoom is a videoconferencing arrangement that is shared and cloud-based, featuring elements such as online gatherings bunch informing administrations and protected meeting account [17]. Zoom enables continuous communication with geographically dispersed individuals using computers, tablets, or cell phones.

Virtual worlds are graphical 3-D representations of genuine locations that have received considerable attention from both the industry and the scholarly community [18]. Virtual worlds have been used in a variety of various application areas, including medical services programming and training. They let a person to interact with a realistic world normally via an avatar. They can examine space control items and, when grouped together, they can connect with other people's avatars. As of late, the Meta-Institute for Computational Astrophysics (MICA) is a virtual world-based Collaboratory.

Chats are almost constant while bogs wikis and forums have longer times in between contributions. At

the point when utilized for appropriated science all are ordinarily confined to an assigned workgroup instead of being public. Because the discussions were automatically recorded, anyone could "read in" to the discussion (looking back and reading what was going on), allowing them to "make up for lost time" despite the fact that their time zones prevented them from fully participating in real-time. .

Wikis, on the other hand, are free-for-all debates with even less organization in design. Though wikis can take any structure, gatherings are often set up for chat threads. Wikis were widely used at the Biomedical Informatics Research Collaboratory (BIRN) to exchange test protocols advice and Frequently Asked Questions (FAQs), as well as announcements of the availability of new programming devices and articles of interest [19].

5) Collaborative Technologies in Healthcare Delivery

The benefits of video communications are being recognized by doctors and patients in the technologically advanced healthcare profession. There is ongoing demand to improve patient care quality and to deliver additional services while keeping expenses under control. Healthcare providers are harnessing the potential of video communications to connect patients, physicians, and clinicians, so expanding the reach of healthcare.

Patients seek reduced out-of-pocket expenses, shorter wait times, and less travel while receiving medical care. Video communications enable medical workers to examine patients and diagnose ailments in real time without requiring either the patient or the practitioner to travel. Medical practitioners often utilize video communications to access continuing medical education (CME) certification programs and to instruct others. Using video communications for telemedicine allows hospitals to access individual knowledge from all around the world [20].

There is evidence that video conferencing employing CTs disseminates complicated medical expertise for enhanced healthcare delivery, according to [11].
The following are specific observations of such characteristics that were critical for the effective use of Video Conferencing Technology as witnessed in the two case studies.

Using video conferencing, there is an emphasis on the need to establish best practices in the medical industry to raise knowledge about new surgical procedures. The participants' comfort with the technology created a desire for video conferencing records in the form of a digital copy. [20] .

Medical professionals that are knowledgeable of the technical characteristics of Video Conferencing equipment will inquire about the requirements for installing or connecting at the professionals' place of practice, as well as the simplicity of using the equipment. Understanding the capability will reduce the anxiety of taking on extra tasks or expense considerations that draw anybody utilizing the technology [6].

As concluded by [10], experts utilizing Video Conferencing with CTs to transmit complicated surgical skills via live surgery demos will focus on content delivery at both ends of knowledge transfer. The specialist doing surgery in the operating room and the presenter at the Video Conferencing location will be able to speak more effectively. The speakers will provide a real-time demonstration using the CTs interfaces, effectively delivering the topic. As a result, the presenters will be able to integrate medical technical and communication abilities in order to effectively offer the Video Conferencing program.

According to [5,] few or no faults in the technical quality of Video Conferencing make the programs more dependable and reliable in healthcare delivery. Smooth video linearity video resolution crisp audio camera quality and handling motion appropriate illumination latency lip-sync will be a significant benefit for a comprehensive Video Conferencing experience.

6) Benefits of Collaborative Technologies

As per [6, p. 244] "A study on what makes widely isolated virtual teams effective found that contrary to popular belief; technology was a significant factor in facilitating their success". Collaborative technology (CT) offers the customer the sense of "real-time" interaction with someone who is far away. CT has created chances within enterprises for employees to collaborate without being in the same room. Clients have also been linked to enterprises thanks to collaborative technology. Prior to this breakthrough, it was difficult for businesses to gather feedback from their customers. Collaborative technology have also enabled corporations to connect to countries on a global scale. This directly effects the prices that businesses may charge and makes their products more affordable to the working class.

Collaborative technologies can help develop solid group relationships with staff working anyplace on the planet.

As cooperation improves and the use of collaborative technology grows, collaborative technology may lower costs for a business and its employees.

It is therefore important for the health care team to collaborate among the member's approaches for instructing and educating patients consistently and appropriately.

Ensuring collaborative teams can also be beneficial to staff and the facility or organization they work in.

Legitimately [7] have anticipated that collaborative technologies will update the hierarchical structure of the medical services industry eventually improving its delivery potential and medical services results.

7) Challenges of Collaborative Technologies in Healthcare Delivery

The start-up cost or initial setup cost in the execution of the innovation in medical services delivery incorporates the assets to acquire both equipment and programming as well as the expense for staff training. This expense includes a large start-up and ongoing cost, as well as risk about the rate of profitability (ROI).

According to [4] helpless authority service and multi-sectoral association in collaborative technologies thwart its appropriation.

III. METHODOLOGY

The study utilized a descriptive case study approach with a survey method to collect data. According to Leedy and Ormrod (2005), quantitative research is used to answer questions regarding the connections between quantifiable variables with the intent to understand, predict, and regulate a phenomenon. This approach was deemed acceptable since it best depicts the features, perceptions, and views of the group under research, ensuring that the study's objectives were satisfied.

1) Pre-Intervention

The pre-intervention revealed the challenges that were associated with the understanding of respondents regarding the questions. It was also through the pre-intervention that corrections were made in the questionnaire and ensured that it still achieved the study objectives. Table 1 below is the outcome of the survey for this stage.

Table 1: Specialty of Respondents

Specialty	Frequency	Percentage (%)
Doctor	9	11.2
Nurse	54	67.5
IT Manager	5	6.2
Records	1	1.2
Laboratory technician	4	5.0
Administration	2	2.5
Accounts	2	2.5
Total	**80**	**100.0**

Source: Field survey 2021

As per the results displayed by table 1, the specialty of the participants indicate 11.2% were doctors 67.5% were nurses 6.2% were IT managers 1.2% was record keepers 5.0% were laboratory technicians 2.5% was administrators and 2.5% were in the accounts department.

2) Expected benefits of collaborative technologies

This section assessed the expected benefits of collaborative technologies of the respondents in the discharge of their duties.

Table 2: How often Respondents use collaborative technologies

Use of technologies	Frequency	Percentage (%)
All the time	24	30.0
Most often	37	46.2
Not at all	1	1.2
Once a while	18	22.5
Total	**80**	**100.0**

Source: Field survey 2021

Among the 80 respondents 30% use Collaborative Technologies at all time 46.2% of them use collaborative technologies most of the time 1.2% do not use collaborative technologies at all 22.5% of them use collaborative technologies once a while. On the other expected benefits of collaborative technologies below are what some respondents have to say:
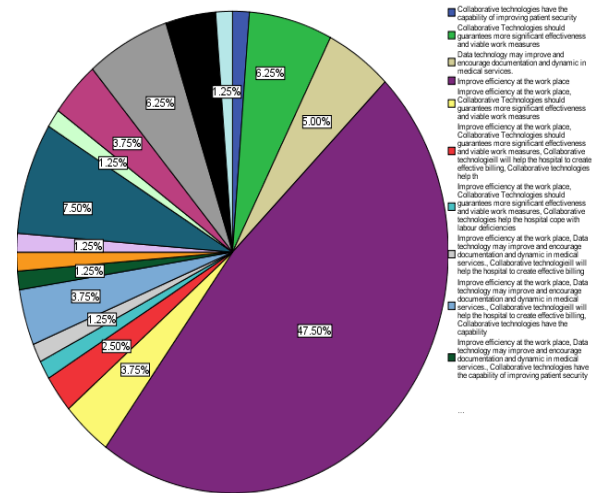

Figure 1: Anticipated benefits of collaborative technologies

Most (47.5% of the respondents indicated that prior to the implementation of collaborative technologies they were anticipating that it will improve their efficiency at work.

Table 3: Whether expectations have been met with the implementations of technologies

Expectations met	Frequency	Percentage (%)
Yes	65	81.2
No	15	18.8
Total	**80**	**100.0**

Source: Field survey 2021

As to whether the expectations of the respondents regarding the use of collaborative technologies have been met 73.8% of them said yes whilst 26.2% said no.

Of the expected improvement in future updates in collaborative technologies below are what some of the respondents had to say:

"I am expecting that future updates will include the use of giant HD screens that can help in surgeries where you can connect well to a consultant." (Respondent 63 2021)

"If the system can be designed in such a way that it will require less network usage" (Respondent 6 2021)

"Users should be able to connect through browsers without downloading the app" (Respondent 62 2021)

"Most of the collaborative tools should have the ability to store and share notebooks for collaborators to access them. This means that they should be able to build electronic notebooks for use in collaboration." (Respondent 53 2021)

A. *Benefits realised from collaborative technologies*

The benefits that the respondents have realized from the use of collaborative technologies in the hospitals is seen in table 4 below.

Table 4: Descriptive Statistics

Parameters	N	Minimum	Maximum	Mean	Std. Deviation
Mistakes on diagnosis and treatment with the use of Collaborative technologies less than manual ones.	80	1.00	5.00	3.9250	1.01601
Collaborative technologies results in effective teams.	80	1.00	5.00	3.6250	1.19466
Collaborative technologies guarantee more significant effectiveness and viable work measures.	80	1.00	5.00	3.8750	.94635
Collaborative technologies help me to better manage my time.	80	1.00	5.00	4.0000	1.09081
The communication via social media empowers the gathering to become familiar with their associates and comprehend their traditions and culture.	80	1.00	5.00	3.8375	1.11188
Collaborative technology can reduce expense for the hospital and the workers.	80	1.00	5.00	3.8375	1.11881
Through Collaborative technologies clients will lessen the requirement for movement and reference to an optional or tertiary health facility.	80	1.00	5.00	3.7375	1.22984
Collaborative technologies have the capability of improving patient engagement.	80	1.00	5.00	3.7250	1.30214
Collaborative technologies have the capability of improving patient security.	80	1.00	5.00	3.8625	1.07614
Valid N (listwise)	80				

Source: Field survey 2021

Majority of the respondents agreed that mistakes with collaborative technologies diagnosis and treatment are less than manual ones (Mean = 3.93). Also most of the respondents agreed that using the collaborative technologies result in effective team (Mean = 3.63). The respondents further agreed that collaborative technologies guarantees more significant effectiveness and viable work measures (Mean = 3.88). The respondents also agreed that Collaborative technologies help them to manage their time better (Mean = 4.00). Most of the respondents further agreed that the communication through social media empowers the

entire group to become familiar with their associates and comprehend their traditions and culture (Mean = 3.84). Majority of the respondents also agreed that collaborative technologies can helped the hospital to reduce cost (Mean = 3.84). It was also agreed by most (Mean = 3.74) of the respondents that through collaborative technologies clients will lessen the requirement for movement and reference to an optional or tertiary health facility. Not the least majority of the respondents agreed that collaborative technologies have capability of improving patient engagement (Mean = 3.73). Finally majority of the respondents agreed that collaborative technologies have the capability of improving patient security (Mean = 3.86).

IV. DISCUSSION OF RESULTS
1) Demographic Characteristics
The results of the study show that majority (88.8%) of the respondents were above the age of 25 years. This age group of respondents is likely to have experienced the use of both collaborative healthcare technologies and the manual or old system of healthcare delivery. Also majority (27.50%) of the respondents had working experience 7-10 years in the particular hospital as shown by the segregated result. However it can be said that 48.7% of the respondents have worked for more than 6 years in the hospital. The segregated results show that only 28.8% of the respondents had worked for less than 4 years in the hospitals. This means that majority of the respondents have more working experience in the hospital.

2) Expected benefits of collaborative technologies
The study results revealed that most (47.5%) of the respondents were expecting collaborative technologies to improve their efficiency at work. The results further revealed that majority (46.2%) of the respondents use collaborative technologies most of the time. Only one respondent (1.2%) did not use collaborative technologies at all. Again 81.2% indicated that their expectations regarding the use of collaborative technologies have been met. Aside the fact their expectations have been met some of the respondents also indicated that they will expect some improvements in future updates some of which giant screens for surgeries and the availability of electronic notebooks. Technologies come with both negative and positive effects and it will be the user who can tell which of the benefits is being realized. It can be said that the more often healthcare staff use collaborative health technologies the more they identify the need for improvement of these technologies in the delivery of healthcare. In line with the [2] indication that a great part of the digitalization process and its items (the digital and virtual environment) are

moderately novel and a few perspectives might be hard to notice or appropriately comprehend.

3) Benefits realized from collaborative technologies
The study revealed that mistakes on diagnosis and treatment with the use of collaborative technologies are less due to the collaboration of different professionals and experts (Mean = 3.93). With the use of collaborative technologies where prescription is done using the collaborative tools information is clear and easily decoded by the team members. Also experts are available to correct mistakes instantly to avert any effect on the patient. This agrees with [8] who indicated that using video communications for telemedicine allows hospitals to tap individual expertise across the world. Also [9] contends that collaborative technologies in healthcare diminished the room for mistakes.

It was also found from the study that using the collaborative technologies results in effective teams (Mean = 3.63). The result further showed that collaborative technologies guarantees more significant effectiveness and viable work measures (Mean = 3.88). Collaborative technologies ensure that tasks are made easier for healthcare staff and improving their efficiency. Groups that access some sort of collaborative technology can share data and communicate inside the group regardless of whether they are not literally in the same room. They might even be in different time zones. In agreement with the findings, [9] also noticed that collaborative technologies in healthcare guarantees more significant effectiveness and viable work measures while improving quality and critically health.

The study also revealed that collaborative technologies help healthcare staff to manage their time better (Mean = 4.00). Collaborative technologies have enabled healthcare staff to effective schedule their time and manage it better. Sometimes prescribers are able to work at the comfort of their homes whilst doing other things. In the hospital settings time spent on tracing patient folders has been eliminated. This agrees with the [3] which stated in a survey that electronic collaborative technologies help the recovery of time and general availability of data at any given point in time.

It was also revealed by the study that the communication via social media empowers the team to become familiar with their associates and comprehend their traditions and culture (Mean = 3.84). The expanded measure of cooperation between collaborative technologies members of a group will help the building of personal relationship. At the point when personal

relationships develop the trust between the workers develops as well. This agrees with [6]who also found that the utilization of online Media inside the firm has effectively connected personnel situated all around the world.

Also the study revealed that collaborative technologies have helped the hospital to reduce expenses (Mean = 3.84) As cooperation improves and the use of collaborative technology grows, collaborative technology may lower costs for a business and its employees. Organizations cut expenses by "compressing work flow improving coordination between groups reducing development costs increasing communication minimizing misunderstandings and enabling linkages with suppliers vendors and clients which speed up the supply chain and other work processes" [6].

It was found that collaborative technologies will lessen the requirement for movement and reference of patients to an optional or tertiary health facility (Mean = 3.74). These are some of the expected benefits of healthcare technologies as indicated by the Ghana Ministry of Health (MOH). The MOH (2010) describes a portion of the critical advantages to be accomplished through a thorough eHealth in Ghana to include improved access and accessibility of healthcare services in distance areas and it will lessen the requirement for movement and reference to an optional or tertiary health facility and improved logistics and supply chain through enhanced MIS for medical and non-medical supplies.

It was also revealed that collaborative technologies have the capability of improving patient engagement (mean = 3.73). This agrees with [10] who concluded that collaboration among health care teams may enhances the patients education and engagement of patient in their care and also contributes to behavioural changes for example information seeking behaviour and effective information delivery involvement of patient in decision-making and participation of patient in self-care.

Finally the study revealed that collaborative technologies have the capability of improving patient security (Mean = 3.86). This agrees with [11] , who argued that some of the advantages of eHealth are improved assistance improved quality and admittance to information for research improved patient results better patient data and strengthening improved populace health results persistent fulfilment and an overall improved protection and security for the patient.

The binary analysis also indicates that the number of years a worker serves in the hospital will cause the efficacy of using CT to increase by 2 times. The longer healthcare staff work and use collaborative technologies the more experienced they become with effectiveness of it and can therefore relate it to their past experiences. The Mammography Quality Standards Act (MQSA) requires all staff at offices to meet basic capabilities to show proceeded with experience and to finish proceeding with instruction for quality [12].

4) Challenges encountered during implementation and use of collaborative technologies

The study revealed that the organizational and physical environment within which a team of interdisciplinary operates can affect the level and means of collaborative interactions and it is one of the challenges of collaborative technologies (mean = 3.68). The environment can considered to include the physical spaces schedules temporal arrangements processes activities organised and tools for communication that can either discourage or encourage effective the collaboration of a team. This agrees with [13] also wrote that organizational and physical environment within which a team of interdisciplinary operates can affect the level and means of collaborative interactions.

Also it was revealed from the study that unwillingness of team members to collaborate can be a challenge to the use of collaborative technologies are difficult to understand and use (mean = 3.89). Interaction of human are a key component of the collaboration the determinants of collaboration incorporate a combination of psychological factors. This finding agrees with [14], who also argued that the determinants of interaction include the team members' willingness to collaborate with others (group constancy affected by group cohesion professional education personal maturity and previous experience).

It was further revealed that poor education and training among members of the team can be a challenge to the use of collaborative technologies (mean = 3.80). Collaborative practice can also be enhanced through skills training and education. Collaborators need to develop some competencies to enable them collaborate well within the team. This agrees with [15] who also found that interviews with health professionals in Alberta indicated that the development of some two key competencies was significant to collaboration. The first one involves role expectations and boundaries understanding within the team of collaboration and learning means of balancing the professional needs identity and team identity.

The study also revealed that there is high cost of acquisition of collaborative technologies especially at the initial stage (mean = 3.59). This start-up cost or introductory establishment cost incorporates the assets to buy both equipment and programming and cost for

preparing of staff. This agrees with the findings of [16] stated that in the execution of the collaborative technologies in medical services delivery the cost included remaining parts probably the challenge.

Also the study results show that the inability to effectively engage in informal and formal communication within the team of collaboration is a challenge (mean = 3.44). Another competency according to [17], team members need to develop is the ability to effectively engage in informal and formal communication not leaving out resolution of conflict and negotiation skills the ability to utilise a communication of dignity and respect and knowing what communication and terminology approaches to use within different individuals and professions. For [18], the knowledge and the use of appropriate technical terminologies can also be important for effective communication and for developing mutual respect for each other and confidence especially in highly specialized and technical environments.

Furthermore the study found that with the use of collaborative technologies data security and protection is a problem (mean = 3.68). The use of technology in healthcare to share data presents an incredible danger to the security of patients and protection of individual and health data. This conclusion is consistent with [19], who claimed that data security and protection is a critical concern for organizations and governments. In the medical services area data insurance is of most extreme importance.

Also the study revealed that one of the challenges of collaborative technologies is inconsistent power flexibly (mean = 3.50). Ghana is undoubtedly characterized by poor power supply which makes the use of collaborative technology devices ineffective. In collaborative technology not all the devices are movable as compared with mobile phones and tablets. There are other devices that use giant screens and that are not mobile and will not function well with poor power supply. This agrees with [2] which demonstrates that limitations to the reception of eHealth in Africa incorporate helpless foundation on the side of health services inconsistent power flexibly.

Not least, the results show a lack of commitment and unambiguous decisions on technology investments as another obstacle of collaborative technologies in Ghana (mean = 3.48). Lack of commitment leads to poor investment and therefore there is usually poor funding for health technologies as also indicated by [2] that limitations to the reception of eHealth in Africa incorporate the low ICT financial plans. Weak

information technology infrastructure was also identified as one of the challenges of collaborative technologies (mean = 3.68). The information system of Ghana is generally weak in most of the fields. [2] indicates that constraints to the adoption of eHealth in Africa include poor infrastructure in support of health services.

The age group sex and the years of service of healthcare staff does not determine their unwillingness to collaborate in a team. However their specialty and how willing they are to collaborate in a team were significantly related (p-value = 0.23). The specialty of collaborators will cause their willingness to increase by 3.102 times. This means that doctors may not be willing to collaborate with nurses and vice versa. Simply put staff of a specific team may not be willing to collaborate with others in another specific field.

V. CONCLUSION

The study concluded that the expectations of staff regarding the use of collaborative technologies in the St Patrick's Hospital have been met and the use of collaborative technologies has been very beneficial to the staff especially those who use them often. The expected benefits of most of the staff in the hospital have been met. Some of the benefits of collaborative technologies are improved the efficiency of the staff effectiveness and viable work measures less mistakes reducing cost better time management among others. There are also some improvements that can be made in future updates of collaboration tools. Today, awareness data is transmitted via the status indicators of Instant Messaging (IM) frameworks. With instant messaging, the client has control over which status indicators to send to others, but this comes at the price of being sure to set it and properly setting it. In the area of programming a critical type of headway in science where coordination of definite efforts is of essential significance yet the work almost imperceptible designers have made and generally embraced different systems to "check in and check out".

It was further concluded that experiencing the benefits of collaborative technologies the appropriate use of them in the delivery of healthcare may empower all staff through efficient and rapid access to healthcare information and the ability to expand the relationship beyond the consulting room. Effective communication and transparency through the use of collaborative technologies should lead staff to understand that collaboration in healthcare through these technologies can be strengthened. Coordination support for gatherings regardless of whether they are up close and personal or far off can be formal and casual. For example Group Decision Support Systems where members are driven

by a facilitator through various computer based exercises to produce thoughts assess them in an assortment of ways undertake partner investigation focus on other options and health delivery are necessary in this modern era.

VI. RECOMMENDATION

The following suggestions were made based on the study's findings:

It is apparent that collaborative technologies are advantageous to healthcare delivery, and they may be used by other hospitals to improve healthcare delivery. As a result, the Ministry of Health should build a bipartisan collaborative health technology system through sufficient funding allocation to enable its adoption in additional health institutions.

Promoting the adoption and use of collaborative technologies should take into account factors such as compatibility, trialability, relative advantage, observability, and complexity, as stated in the Rogers Model, because these were found to be significantly associated with the adoption and use of collaborative technologies.

The hospital should institute a training program to periodically train staff on emerging technologies to avoid the perceived difficulties among the staff.

There is the need for the hospital to have a define plan on the financing of collaborative technologies. This will avoid funding deficiencies in the adoption and management of collaborative technologies.

Exceptional procedure must be set up by governments and strategy author to guarantee legitimate arrangement for a public collaborative technologies climate and adjust financing for collaborative technologies usage to public needs and make the lawful structure for its execution and long-term sustainability.

The collaboration among health professionals is very important to healthcare system performance and especially for its sustainability. It is therefore recommended that developing collaborative networks between healthcare professionals is required.

There is the need for a future research into the impact of collaborative technologies on the health of patients in the hospital.

VII. ETHICAL ISSUES

The study required approval from the hospital's management. Each participant was asked to offer informed verbal permission before to the interview. Participants were informed throughout the interview that they might opt out at any time. Any information obtained from participants was carefully kept secret. The surveys did not include names, instead relying on codes for identification. The researcher further said that participation in this study was fully voluntary and without any form of coercion. Questionnaires were sent to respondents at their various hospital offices to protect their confidentiality. Where such facilities were not available, they were summoned and the questionnaire was discreetly handed over to them. The collected data was treated as confidential, and participants were informed that their participation was being recorded.

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