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FROM PAPER TO DIGITAL: THE IMPACT OF TRANSFORMATION ON HEALTHCARE PROVIDERS

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Abstract

Background

Technology is driving a vital global shift in healthcare toward more efficient and patient-focused care. The integration of Electronic Health Records (EHRs) is key to this digital transformation, aiming to improve efficiency, patient safety, and health outcomes. While digital systems offer benefits like reduced paper burden and quick data access, healthcare providers often face initial challenges, including technical issues, increased workload, and a need for more training.

Aim: *This study aimed to examine the impact of digital documentation on the healthcare providers and challenges faced by healthcare providers, also evaluate their satisfaction, confident, attitude and communication after transition from paper to digital documentation.*

Method: *A Descriptive Cross-sectional study was conducted at Indus Medical College and Hospital, Tando Muhammad Khan. Data was collected from Staff Nurses, Post Graduates and Technicians, by using a self-constructed questionnaire with a five-point Likert Scale and sample size of the study was N=118.*

Results: *The study showed positive findings, majority of participants were agreed that Electronic documentation is easier to use (89.8% agreed/strongly agreed), 87.3% agreed that less time spends on digital documentation. (87.3% agreed/strongly agreed), and improves work efficiency (91.5% agreed/strongly agreed).87.3% participants were agreed feel more confident in using digital documentation. 89% contributors agreed that their stress reduced related to record-keeping with the Digital system. Furthermore, a high percentage of respondents felt motivated (91.5% agreed/strongly agreed). However, some challenges were also noticed 68.7% agreed they needed more training, 79.6% were strongly agree that they face difficulties to understand digital system, and 69.5% participants reported frequent technical issues in digital documentation system.*

CONCLUSION: *The study findings concluded that, most of the respondents were agree that digital documentation is better than paper- based. Digital transformation has positive impact on healthcare worker's skills, efficiency of work, job performance and attitude. but they need more trainings for effective usage of Electronic Health Record.*

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INTRODUCTION

Technology has taken over the entire world and it's a crucial. Several technological devices are utilized by nearly everyone on the planet, and they have changed the environment of every workplace. Therefore, Technology as an "organizational actor," technology now enhances the availability of workers for businesses. Information and communication technology at the workplace aim to boost workers' productivity. Additionally the technology and new devices are the necessary part of every organization and it also brought new transition in organization and also on employees(Rasool, Warraich, & Sajid, 2022).The change in an organization is a significant part of development and growth, allowing the institution to change and progress. When the change is well organized, effectively communicated and the consequences for employees are evaluated. Therefore, the new changes are impact on employees and they take a time to cope this change(Baniulyte, Rogerson, & Bowden, 2023). However the employees performance play a crucial role in organization's development. While various factors impact employee performance it may be a positive impact like increase motivation, new skills and new technologies. However Understanding this dynamic and it is essential to boost workplace productivity by intrducing new technologies(Shwedeh, Aburayya, & Mansour, 2023).

The huge change in healthcare marks a vital change towards more cohesive, efficient, and patient-focused care. By interweaving advanced technologies such as electronic health records (EHRs), telehealth services, and artificial intelligence into new era in healthcare delivery, prioritizing passion, care, and safety. Additionally most of countries like Australia, United States, France and New Zealand used these devices and Artficail Intellegence to detect abnormalities and diagnosed chronic diseases(Mulukuntla, Venkata, & Science, 2020). However, the digital health is a global phenomenon, the digital transformation providing healthcare services in worldwide and the technology have a capacity to improved efficiency, patient safety and health outcomes. Therefore the healthcare providers play a vital role in transformation, they are responsible to utilized this change and provide effective and safe care to the patients.(Janes et al., 2024).

All health care providers play important role in adapting new technologies in health care system, but when it is specific to digital documentation, Nurse plan a vital role because, Nurse is primary caregivers, and has a potential to drive transformative change, and nurse can lead efforts to minimize the environmental impacts. Therefore, that achieved through interaction with patients and correct documentations.(Irwin et al., 2025).However, the effective communication is vital for healthcare providers for high-quality patient care, effective communication leads to accurate documentation which enhance quality patient care and decision making about patient disease, while poor documentation can lead to gap and decreased the quality of care.(Slyngstad & Helgheim, 2022).

Now worldwide the electronic documentation is wildly implemented and value globally, and it is a mandatory for that modern era(Nugraha, Mediawati, & Somantri, 2022).Moreover, Studies have shown that information technology improves healthcare outcomes by increasing efficiency and quality of care, fostering stronger doctor-patient relationships through digital record-keeping.(Emon, Khan, Alam, & Technology, 2023).Additionally, Electronic Health Records (HER) have innovated healthcare by transforming from paper based to digital system, this improving accuracy and data access of patient histories just a few clickes, an other way it also reduced the paper burden and save the time.(Mulukuntla et al., 2020). Digitalization boosts efficiency, support workflows, and provide significant benefits for organizations. Electronic Health Records (EHRs) specifically help reduce errors, enhance communication, increase transparency, minimize medical oversights, and provide easy access to patient information (Provenzano et al.2024). However Utilizing digital health technologies strengthen healthcare performance, workflow, increase efficiency and better the patient interactions.Whenever the

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healthcare providers utilized the digital technologies and documentations, it enhance their personality and energized to do work efficiently.(Jeilani & Hussein, 2025). The technology has upgraded documentation system, improve communication in healthcare settings. Additionally, the Electronic Health Records also influence job performance, leadership skills, job satisfaction, support from organization and also enhanced the positive attitude of healthcare providers, if adapted sucessfully. The Electronic Health Records goal to progress efficiency, validity and provided easy access to patient data and minimize errors(Mulukuntla et al., 2020). Along with lots of benefits of EHR, health care workers also face some challenges specially in low and middle-income countries (LMIC)(Mensah et al., 2023), like increased workload, error in records and mismatch notes. Moreover, The implimentation of EHR are not always meet staff expectations, Such as lack of experiences about technology, insufficient training, technical issues and fear of breach confidentiality of patients.(Mulukuntla et al., 2020). Furthermore, the healthcare providers face enormiouse difficulties initially including, lack body of knowleged about advance digital tools, inadequate training initially take long time for documentation these factors contributes to frustration and potentially burnout. Staff also face initial data error problems and system usablity.(Borges do Nascimento et al., 2023). Therefore this study focus on effects of digital tranformation in Indus Medical Collage and Hospital Tando Muhammad Khan, the hospital was changed from paper to digital documentation.

Rational of the Study

Digital transformation is major transition in the health care system.Traditional paper based documentation was replaced with digital documentation and it brings lots of challenges in health care system, Nowadays digital transformation has a significant impact on Healthcare systems and Healthcare providers, both positivily and negativily. Challenges faced by healthcare providers, includes, increased workload, training requirements, and adaptation to new technologies. This research contributes to better planning, implementation, and management of digital health systems by highlighting both benefits and challenges experienced by healthcare professionals. From the literature it is exposed that along with lots of benefits of digital documentation there are also some demerits of digital documentation. Therefore, It is important to fulfil the gap of litertiure, and examine benefits of digital documentation and challanges faced by healthcare workers to narrow the gap of literature.

Aim of Study

To examine the impact of the transition from paper-based systems to digital technologies, and also the challenges faced by healthcare workers while adapting digital documentation, focusing on efficiency, quality of care, and work practices at Indus Medical College and Hospital.

Objectives of the study

To examine the impact of digital documentation on the workflow and time management of healthcare providers.

To assess the benefits of digital documentation for healthcare providers.

To evaluate challenges faced by healthcare providers in adapting digital systems at healthcare system.

Research Question

1. What was impact of digital documentation on the healthcare providers?
2. Does the healthcare providers manage time and provide effective care by using digital documentation?

METHODOLOGY

The Cross-sectional study was conducted at Indus Medical College and Hospital, Tando Muhammad Khan. where the participants were ease to access. Data was collected through online Google form questionnaire to evalute the impact of digital documentation on healthcare providers. This study setting was chosen because Digital

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documentation system has been recently started at Indus Medical College and Hospital, Tando Muhammad Khan. Convenient sampling tachnique was used to collect the data, after taking informed consent from participants. Sample size of the study was 118. The study participants were Healthcare providers including Post Gradutes, Staff Nurses and Technicians, selected from differents wards included Peadiatric ward, Gynaecological ward, OT (operation Theater), Surgical ward, Emergency ward, ICU (Intensive care Unit), Medical and Surgical wards of Indus Medical Collage and Hospital, Tando Muhammad Khan.

Data Collection Tool

The self structured Questionnaires was developed to evalute the impact of digital documentation, job performance, documentaton related stress, skills improvement, increased motivation, and the level of staff stisfisfication with new digital system. The questionnaiers utilized five likert Scale, with responses option ranging from "Strongly Disagree" to "Disagree", " Neutral", " Agree", and "Strongly Agree".The questionnaire was consist of 29 questions.

RESULTS

Findings

Table:1 Healthcare Professional`s Insights On Shifting From Paper To Digital Documentation

Sr# NO	Question	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
01	**Electronic documentation reduces the time I spend on paperwork.**	5.1%	4.2%	5.1%	58.5%	28.8%
02	**Paper-based documentation is more time-consuming than digital systems.**	2.5%	8.5%	5.1%	55.1%	29.7%
03	**I find electronic documentation easy to use.**	3.4%	2.5%	6.8%	55.9%	33.9%
04	**Paper-based records are easier to manage than electronic ones.**	14.4%	50%	8.5%	22%	6.8%
05	**Electronic documentation improves my efficiency at work.**	3.4%	0.8%	5.1%	69.5%	22%
06	**Does digital transformation influence my efficiency and skills?**	2.5%	6.8%	11.9%	47.5%	32.2%
07	**I make fewer documentation errors using digital systems.**	5.9%	28%	22.9%	34.7%	9.3%
08	**I feel confident using electronic health record (EHR) systems**	3.4%	3.4%	6.8%	61.9%	25.4%
09	**Paper records are more prone to being misplaced or lost.**	3.4%	5.9%	14,4%	47.5%	30.5%
10	**Do You face difficulties to understand digital system initially?**	0.8%	9.3%	10.2%	57.6%	22%
11	**Digital systems allow quicker access to patient records.**	0.8%	4.2%	4.2%	42.4%	50.8%
12	**Using electronic documentation reduces stress related to record-keeping.**	3.4%	5.1%	5.1%	48.3%	40.7%
13	**I need more training to use digital documentation effectively.**	3.4%	14.4%	14.4%	44.1%	24.6%
14	**The shift from paper to digital documentation was smooth in my facility.**	2.5%	3.4%	12.7%	62.7%	19.5%
15	**Digital documentation improves communication among staff.**	2.5%	3.4%	8.5%	56.8%	29.7%

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16	Believe electronic records are more secure than paper records.	1.7%	1.7%	7.9%	53.4%	36.4%
17	Paper-based documentation is more suitable for emergencies.	4.2%	34.7%	19.5%	29.7%	12.7%
18	Electronic documentation helps me provide better patient care.	3.4%	1.7%	8.5%	69.5%	18.6%
19	Technical issues frequently disrupt my use of electronic documentation.	4.2%	13.6%	14.4%	47.5%	22%
20	I prefer electronic systems over paper for daily documentation.	1.7%	4.2%	8.5%	62.7%	25.4%
21	Paper documentation results in more delays in patient care.	4.2%	6.8%	10.2%	52.5%	27.1%
22	I am satisfied with the current digital documentation system in use.	2.5%	6.8%	6.8%	57.6%	28%
23	Does leadership style have an impact on employee performance?	4.2%	2.5%	12.7%	58.5%	22.9%
24	Does the digital culture effect on your job performance and productivity?	3.4%	8.5%	16.1%	42.4%	30.5%
25	I feel motivated to perform better with effective digital tools.	2.5%	0.8%	5.9%	61%	30.5%
26	My organization provides adequate resources to support digital documentation.	3.4%	7.6%	16.1%	51.7%	22%
27	Training programs for digital systems are sufficient and helpful.	3.4%	5.1%	5.9%	55.9%	30.5%
28	The use of digital documentation has improved patient safety.	5.9%	2.5%	7.6%	61%	24.6%
29	Believe digital transformation is essential for improving healthcare quality.	5.9%	3.4%	4.2%	58.5%	28.8%

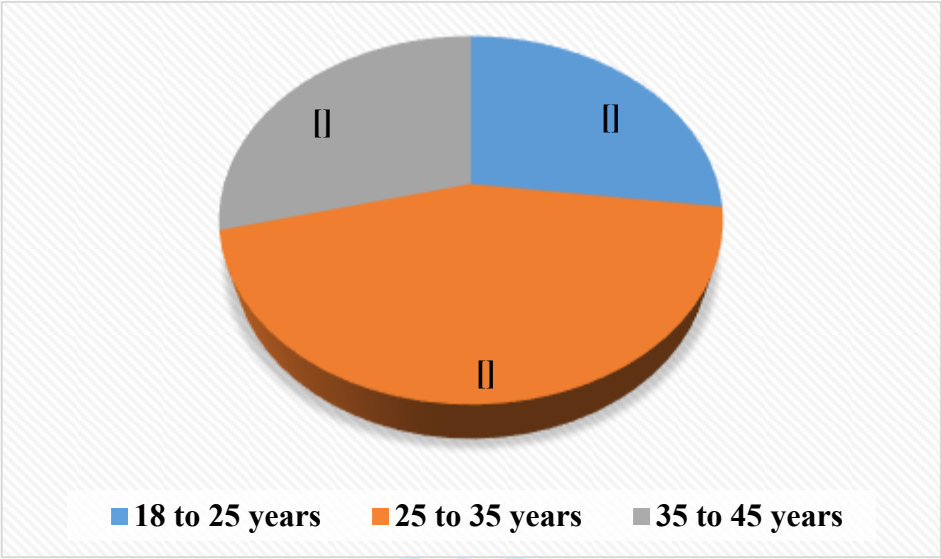
This table Shows the percentage of participant`s attitude and perceptions regarding the transition from paper-based to electronic documentation system. It shows positive finding and high level of agreement towards digital documentation.It represent the main categories including, effeciency and time management,Confidently and ease to use, impact on quality, safety, and emergency quick access. About 55.1% staff were Agreed that paper-Based record is more time consuming, while 29.7% staff were Strongly Agree.Correspondingly, 55.9% healthcare providers were agreed that digital documentation were ease to use, In addition to that, 33.9% healthcare providers were Strongly Agree. Similarly, 61.9% were feel confident to used Electronic Health Record (HER),While 25.4% were strongly agree. Additionally, 50.8% staff were Strogly Agree that digital documentation give quick access of patient recods. .In the same way, 48.3% health care providers were Agree that digital documentation reduce the stress while keeping the record, while 40.7% were strongly agree. Moreover, 56.8% were Agree that digital documentation improve commmunication among staff menbers, in response to this statement, 29.7% were Strongly Agree. About 61% contributors were agree that digital record are more secure and safe than paper-based,and 36.4% were Strongly agree.Furthermore, 69.5% participants agreed that the electronic documentation help the staff to provide better patient care, and on the other hand 47.5% staff face technical isssues, that create distrubance during using electronic system, and 22% were Strongly Agree. Correspondingly,62.7%

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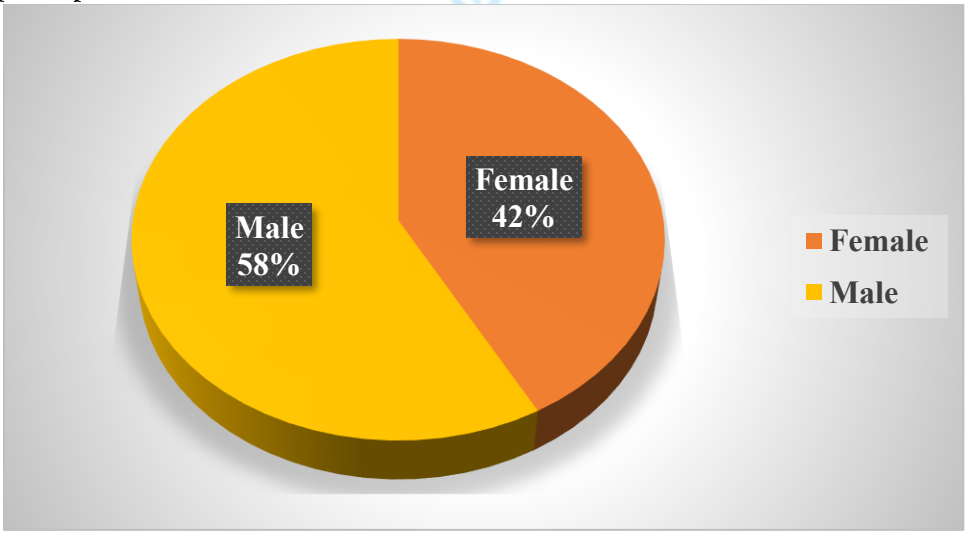
healthcare providers prefer Electronic system for daily documentation and 25.4% were strongly agree for that. Similarly, 57.6% contributros were satisfied with current digital system, while,28% were strongly agree. Additionally, 61% health care providers were motivated to perform digital tools, Meanwhile, 30.5% were strongly agree. Moreover 58.5% respondents were Agree that digital transformation improving healthcare quality, while 28.8% were strongly agree.

Age of Participants



This pie chart shows the age categaries of participants. About 44% participants were in the age group of 25 to 35 years, and 29% were 35 to 45 years aged and remaining 27% were 18 to 25 years old.

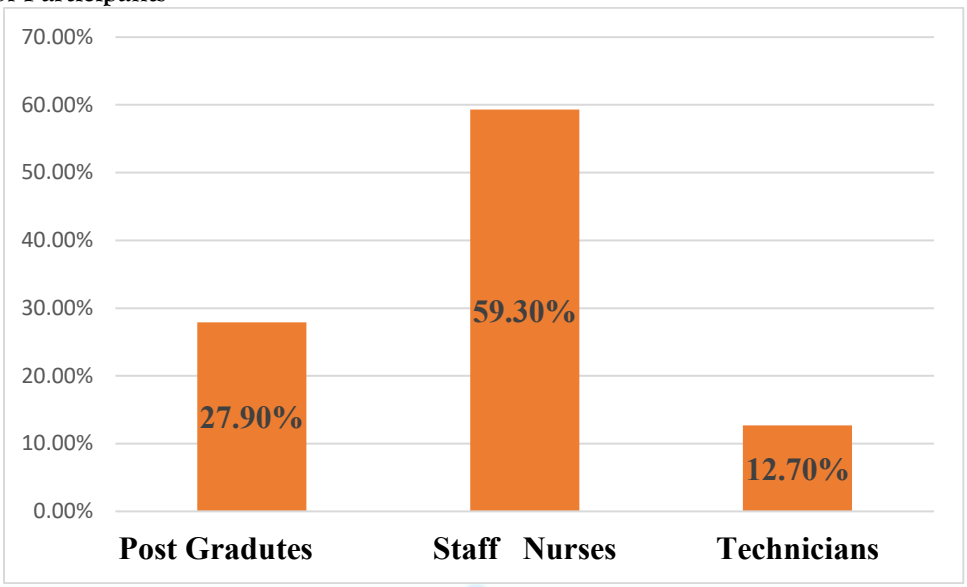
Gender of participants



This pie shows the gender of participants. 58% particpants were male and 42% were female in this study.

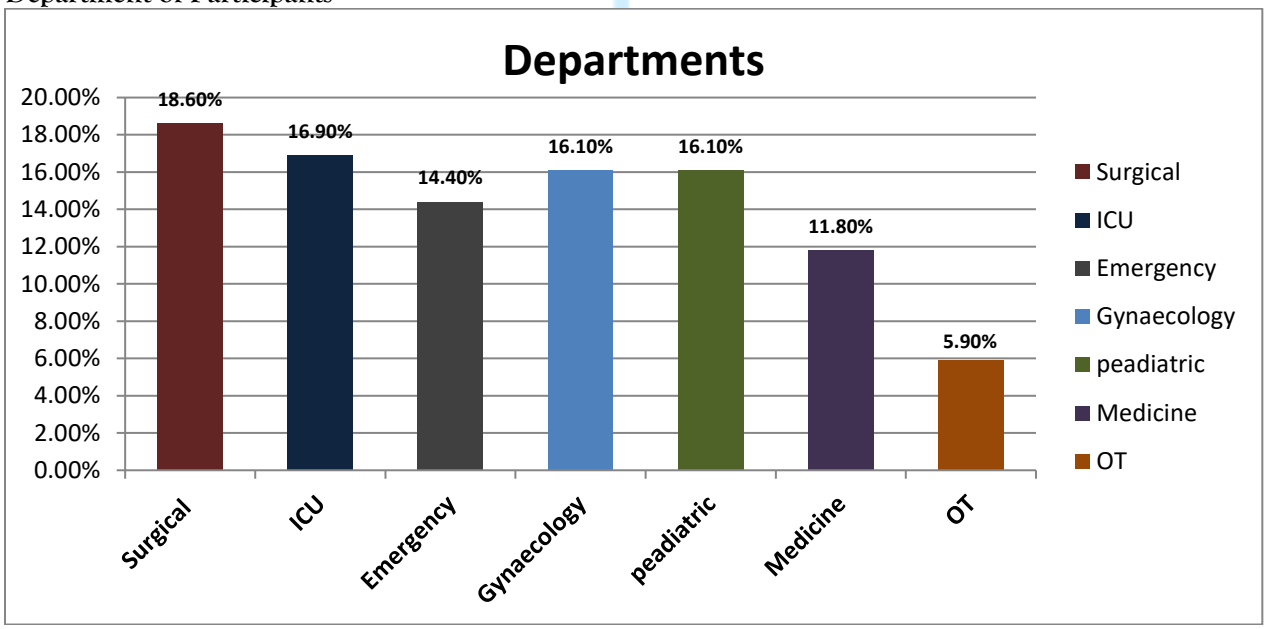
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Profession of Participants



The above chart shows the participant's profession. Majority of participants 59.3% were Staff Nurses, 27.9% were Postgraduate Doctors and 12.7% were Technicians in current study.

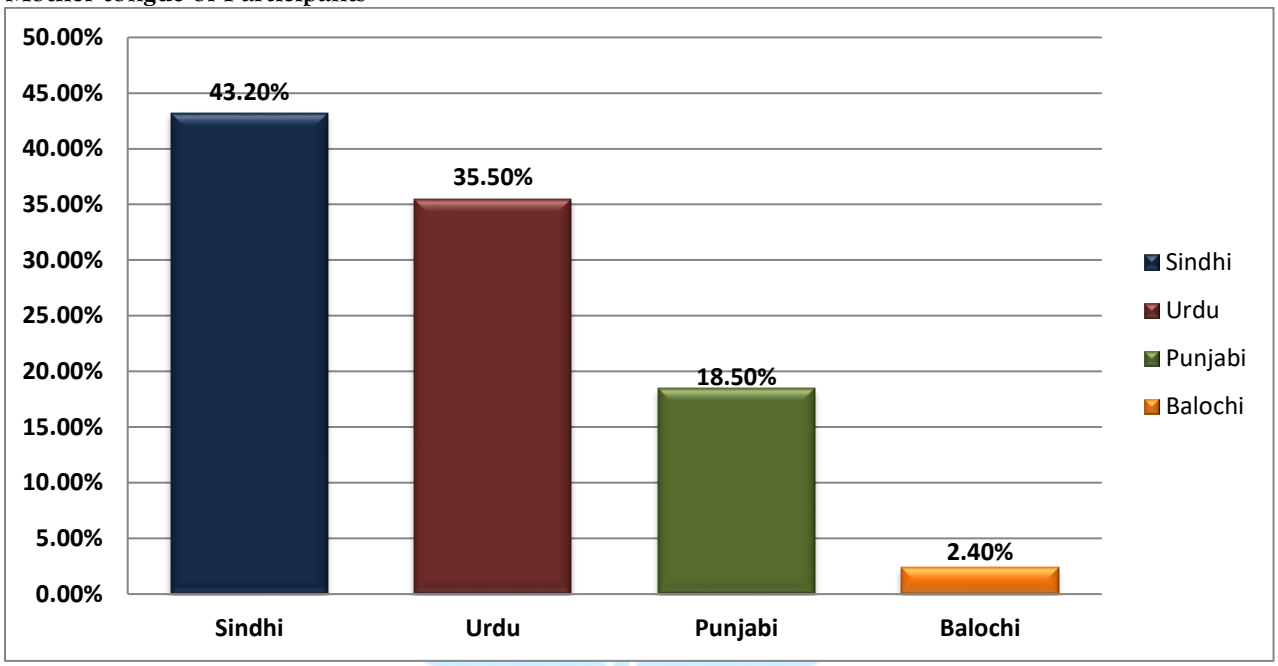
Department of Participants



This chart illuestrate the departments of participants. 18.6% participants were from surgical ward,16.9% from ICU, 16.1% were Gynaecology ward, 16.1% from Peadiatric ward, 14.4% were from Emergency department,11.8 were from Medicine, and 5.9% from Operation Theater department.

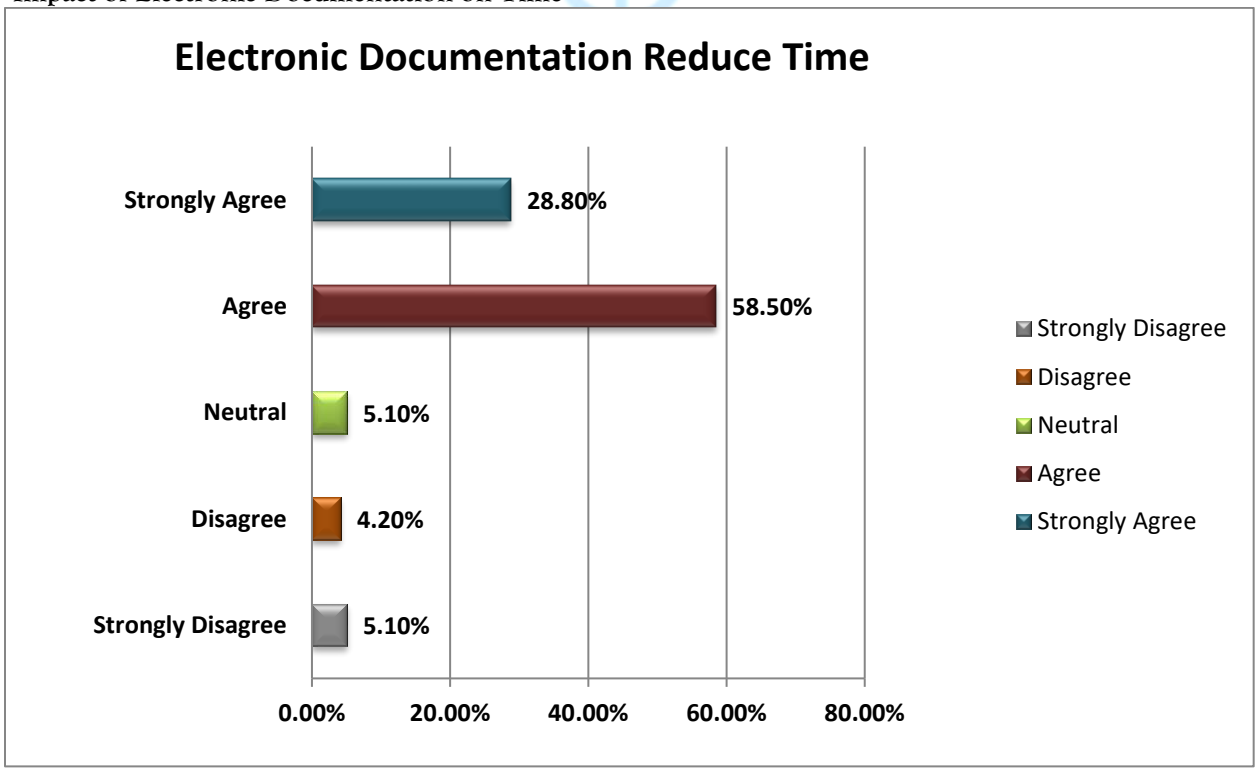
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Mother tongue of Participants



The above chart shows the Mother tongue of participants. Most of the participants were Sindhi speaking 43.2%, 35.5% were urdu speaking, 18.5% were punjabi speaking and 2.4% were balochi speaking in current study.

Impact of Electronic Documentation on Time

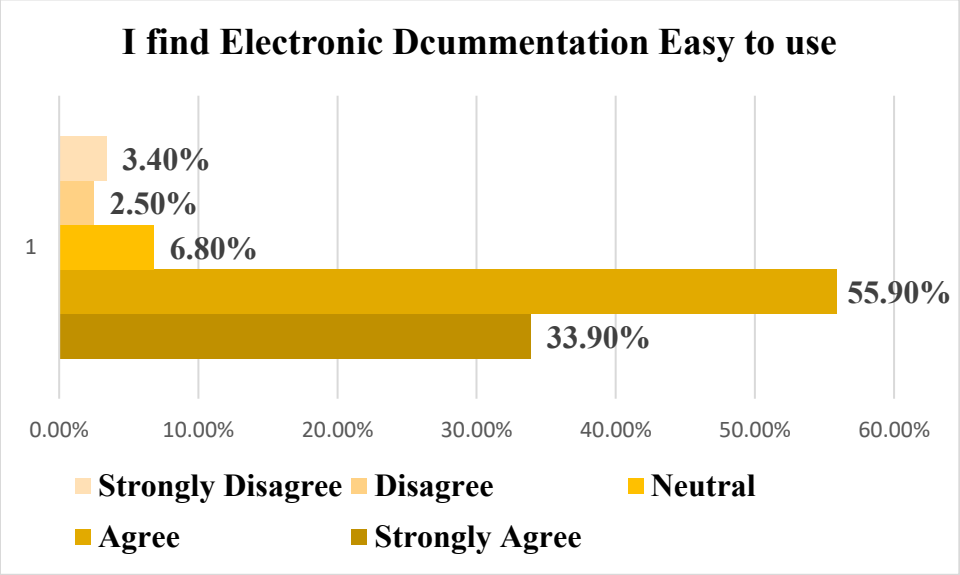


The above chart shows that Electronic Documentation Reduce the time. Majority of the respondents were agree that the electronic documentation save the time, as compared to paper based documentation, 28.8%

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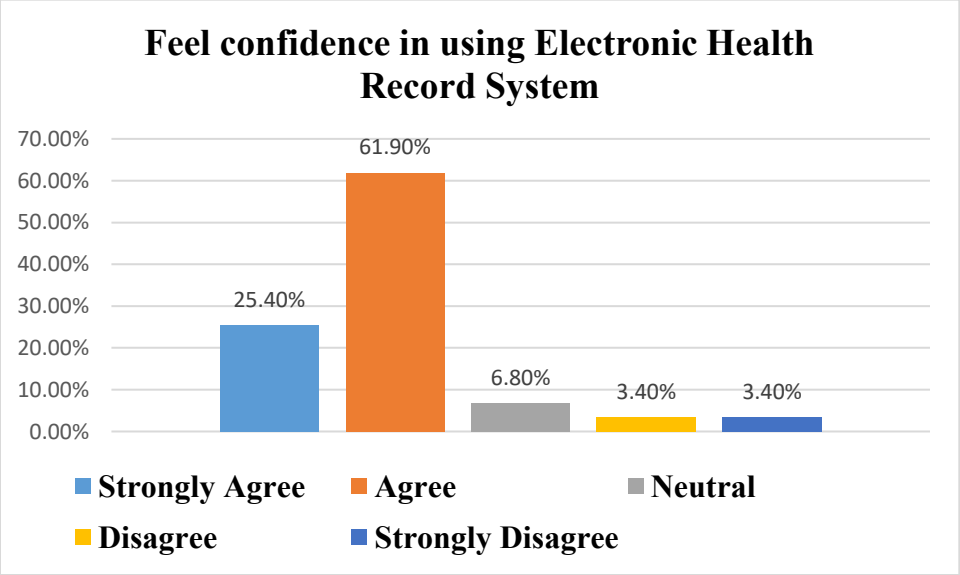
respondents were strongly agree and 58.5% were agree, and on the other hand 9.30% the combine Disagreement from that statement, and 5.1% were Neutral.

Participant's response on usage of Electronic Documentation



This chart highlighted the responses of participants that Electronic Documentation were feasible for them. About 55.9% respondents were feel ease to use Electronic Documentation, 33.9% were Strongly Agree for that, and the combine rating of Disagreement were 5.9% and 6.8% were neutral.

Participant's Confidence to use EHR



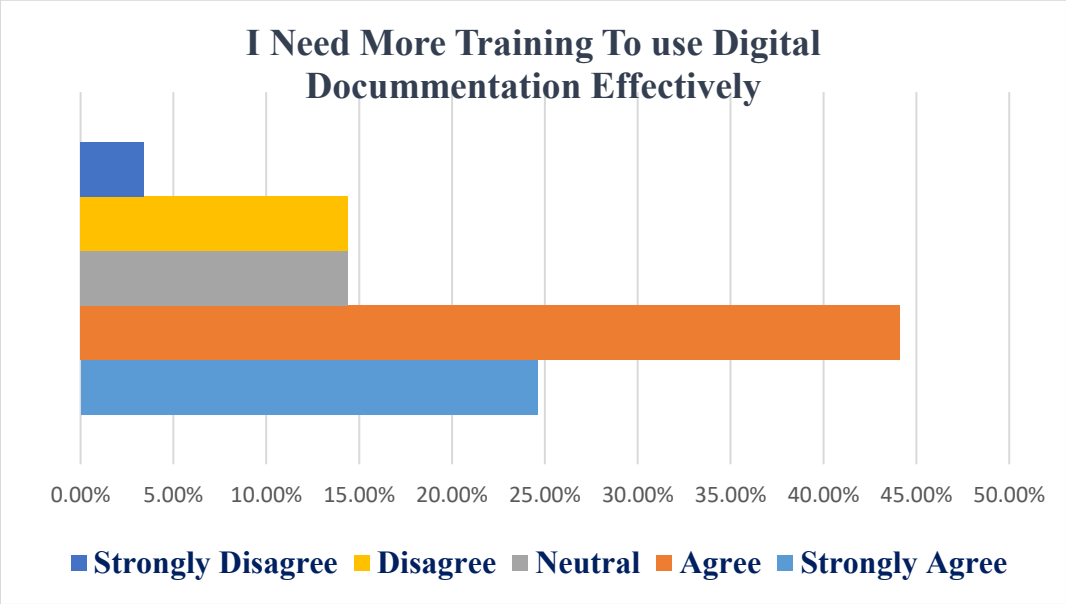
The above chart shows that 61.90% participants were feel confident while using EHR, 25.40% were strongly agree in this statement. In the other hand 3.40%% were strongly disagree and 3.40% were disagree for this statement, and 6.8% participant's response were Neutral in response to above statement in the current study.

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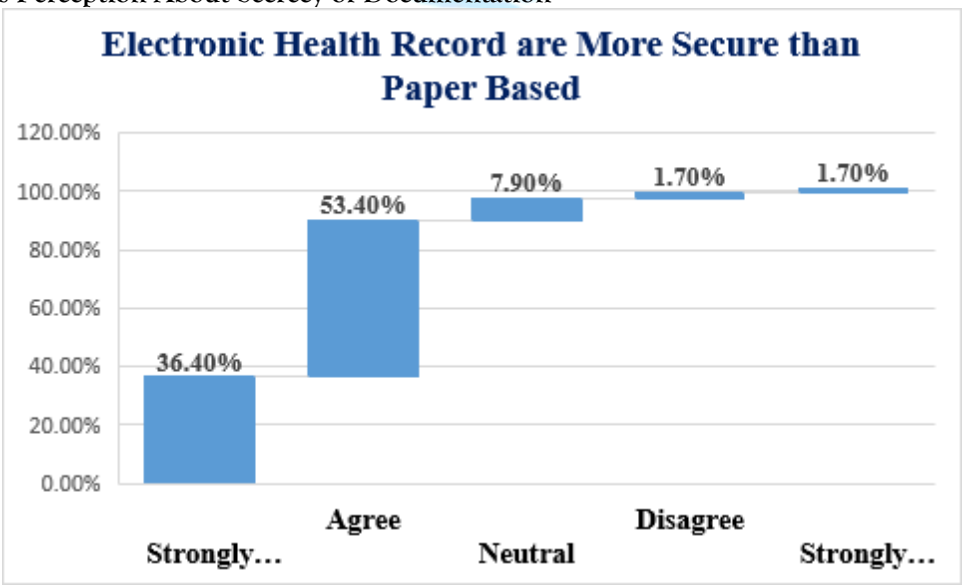
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Respondent's percentage about Need of training for using Digital System



The above chart highlighted that 44.10% healthcare providers were facing dificulties and need training regarding usage of digital documentation to perform effectively. About 24.60% were strongly agree,14.40 were Neutral, 14.40% were disagree, and 3.40% were strongly disagree.

Participant's Perception About Secrecy of Documentation

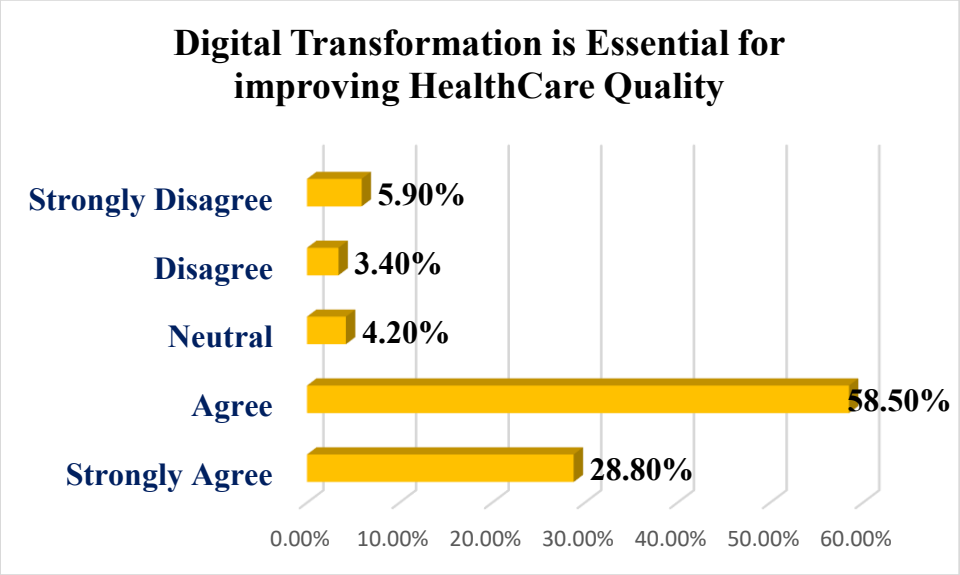


The chart shows that 53.40% were agree that the Electronic Health Record were more secured than Paper record and 36.40% were stongly agree, 7.90% were Neutral, and percentage of disagree and strongly disagree were 3.40%.

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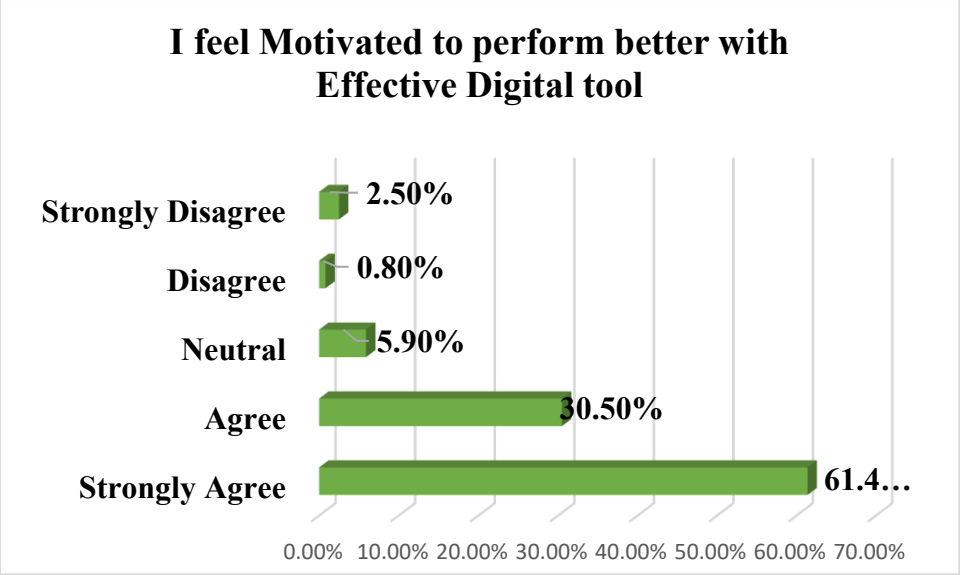
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Contributor's Response about Digital transformation and Healthcare Quality



The above chart shows that, 58.50% participants were agree that digital transformation improve healthcare quality and it is essential for quality of Health care system. About 28.80% were strongly agree in respnse to this statement, 4.20% were Neutral, 3.40% were disagree and 5.90% were strongly disagree.

Percentage of Participant's Motivation in Performing Effective Digital Tools



The chart shows about 61% participants were agreed that while using digital tools they were motivated, 30.5% were strongly agree, 5.90% were Neutral, 0.80% disagree and 2.50% were strongly disagree.

DISCUSSION

The focus of current study was impacts of digital transformation on healthcare providers. The current study shows that Approximately half of the participants were agree that digital Documentation reduce time in documentation, In the same way, about 55.1% were agree and 29.7% are strongly Agree that Paper-Based documentation is more time consuming than digital documentation. These findings are parallel

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with, Lindsay et al, (Lindsay & Lytle, 2022), they encounter that Electronic health record save time. Another study conducted by Tsai et al, support findings of current studys, reported that Eletronic Health Record improve their efficiency and skills in work(Tsai et al., 2020). Previvous study conducted by Apathy C, et al, also highlighted that the frequent used EHR fuctions improved work efficiency. They also highlighted that physicians and staff nurses repoted that they gain efficiency due to the quick access of information and less time spend on paper-Based documentation(Apathy C, et al 2025). Additionaly, the current study findings represents 61.9% respondents feel confident while using digital documentation, in the same way, Mitchell J, et al conducted study, which align with current study findings, Mitchell highlighted the digital documentation assessment on newly nurses and evaluate the competency and confident of nurse regarding EHR (Electronic Health Records), In that study pre and post-confidence of nurses was measured. Moreover, the half of the study findings represents, that after implementation of digital documentation the stress level of the staff was reduced. Similarly Adusumalli J, et al, reported that 51% stress was reduced after digital documentation and staff were satisffied with that.(Adusumalli, Bhagra, Vitek, Clark, & Chon, 2021). Another study conducted in 2021 by AlQahtani M et al reported that staff was satisfied with digital docummentation(AlQahtani et al., 2021). Current study findings further represents that 53.4% participants were agree and 36.4% were strongly agree that Electronic Health Record are more secured than paper-Based and 47.5% were agree that paper baesd documenation were misplaced sometime. These findings are consistent with study conducted by Keshta I et al, highlighted that Electronic Health Records are more approachable, accessible and secured safeguard for patients data and also easily feasible(Keshta & Odeh, 2021). Therefore, it is measured from current study finding that 61% healthcare providers were feel motivated to use digital system. Similarly the determination of present study are align with Jedwab R et al, reported that 40.3% staff nurses were motivated to use digital tools(Jedwab et al., 2021).

From the findings of this study it is revealed that about 44.1% participants need training, need more clarification and expertise to effective usage of digital documentation and 47.5% were face technical issues. These findings are corresponding with the study conducted by Khan R et al, reported that, majority of the staff members require training and knowledge about newly implemented Electronic Health Record(Khan, Khan, Almohaimeed, Almars, & Pari, 2025). Moreover, the current study outcomes also signify that majority of staff were agree that digital transformation are crucial for improving healthcare efficiency and productivity, with the help of digital documentation patients quality care is also improved. These findings are consistent with the study conducted by Uslu A et al, stated that digital record puts positive effects on the quality of patient care and overall health care system was improved through transformation from paper based to digital documentation(Uslu & Stausberg, 2021).

CONCLUSION

The objectives of this study was to examine the impact of digital documentation on the performance of healthcare providers and challenges faced by them in this transition. The study findings concluded that, most of the respondants were agree that digital documentation are better than paper- based. The newly implemmented digital transformation has positive impact on healthcare worker's skills, efficiency of work, job satisfaction, job perfomance and attitude. Majority healthcare workers feel confident and their work stress reduced due to current digital documentation system, but they need more training for effective usage of Electronic Health Record.

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