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Scripting Patient Life: Care Providers' Handwriting and Patient Care in Ghana

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ABSTRACT

Healthcare providers' illegible handwriting affects patients' health and lives. It causes medical errors leading to patient deaths, injuries, and legal actions. Evidence shows that hard-to-read or ambiguous written communication affects person-centred care in Ghanaian hospitals. This paper discusses obscure handwritten communication and its impact on patient care and nurses' caring practices. Nurses, patients, and caregivers participated in the study conducted in a public hospital in Yendi. Thematic analysis of participant observation and focus group data was undertaken. Manual inductive coding yielded data categories and themes to reveal how doctors' hard-to-read handwritten communication delays patient care, safety, and participation in the care process. Also, doctors' hard-to-read handwritten communication hindered nurses' ability to deliver timely care, affecting their self-esteem, confidence, and therapeutic relationships with patients. Minimizing the consequences of unclear written communication requires healthcare professionals to become conscious of their handwriting. They must take time to write clinical notes and prescriptions legibly to reduce medical errors from poor handwriting. Healthcare administrators must organize handwriting training to improve medical practitioners' handwriting skills and invest in technological and/or digital tools for record-keeping to minimize illegible handwriting.

Keywords: clinical errors, illegible handwriting, miscommunication, patient safety, person-centred care

INTRODUCTION

Despite the severe consequences of clinicians' handwriting on patient safety, nurses' professional assessment, and clinical decision-making (Amdany & Kiprop, 2023) less empirical research exists on this topic, at least in the Ghanaian context. Unintelligible (hard-to-read or understand) written communication causes many medical errors (including diagnostic, medication, surgical, procedural, and injection errors) and miscommunication, which affect care continuity and patient safety (Adegboyega, 2018; Kutrani et al., 2019; Topcu et al., 2017).

Healthcare providers' poor handwriting causes medical errors which are a leading cause of deaths, injuries, and legal cases in the United States of America (USA), the United Kingdom, and other countries (Batta & Singh, 2018; Medical Trends Now [MTN] Editorial Team, 2022; Sokol & Hettige, 2006). Research shows that annually between 30,000 and over 40,000 patients die in Britain, the USA, and India due to medical errors resulting from doctors' bad handwriting (Batta & Singh, 2018; Borah, 2015; MTN Editorial Team, 2022; Sokol & Hettige, 2006; Zhang et al., 2020). Sadananda (2016) reported that preventable medication mistakes caused by illegible handwriting and unclear abbreviations harm over 1.5 million Americans annually.

Clinical research has shown severe consequences of healthcare providers' handwriting on patient care and well-being across different care settings (Alqahtani, 2021; Brits et al., 2017). Alqahtani (2021) examined 140 community pharmacists' opinions and attitudes toward poor prescription writing in Saudi Arabia and found that almost 81% of the pharmacists reported that poorly handwritten prescriptions were responsible for medical errors when dispensing medications (Alqahtani, 2021). Similarly, Topcu et al. (2017) conducted a cross-sectional study in Turkey across 14 training and 20 state hospitals among 1,654 nurses and 619 physicians to understand medication errors resulting from communication failure. The study found that 39.2% of physician errors and 42.2% of nursing errors involved written orders (Topcu et al., 2017). Topcu et al. (2017) also discovered that the most common error experienced by physicians and nurses was administrating incorrect medication 32.8% and 40.7% of the time respectively.

Also, Brits et al. (2017) studied how poor doctors' handwriting impacts dispensing errors in a district hospital in Bloemfontein, South Africa. Twenty doctors wrote 20 handwritten prescriptions yielding 300 prescription readings (Britsa et al., 2017). Five doctors, five nurses, and five pharmacists read the prescriptions and error readings were recorded resulting in 18.5% overall prescription errors. In 35% of the cases, the prescribers' names could not be identified, abbreviations of drug names led to 60% of drug name errors, and pharmacists made the most errors interpreting the doctors' handwriting (Britsa et al., 2017). Since pharmacists and nurses are directly involved in patient care, errors due to poor handwriting can significantly affect patient care and life when medications are dispensed.

Furthermore, a study in Kenya exploring handwritten prescription best practices among clinicians and their impact on medical errors revealed that clinicians had improved their handwritten drug prescription practices by capturing patient names, diagnoses, and dates (Amdany & Kiprop, 2023). However, about 80% of these handwritten drug prescriptions were hard to read, potentially causing adverse patient health outcomes. This finding prompted Amdany and Kiprop (2023) to recommend regularly auditing doctors' handwritten drug prescriptions and providing continual education to improve practice. Other research and media reports demonstrate that compromised patient safety and increased financial burden on health systems emanate from medication and clinical errors and mistakes due to hard-to-read handwriting and poor written communication by healthcare providers (Borah, 2015; Cloete, 2015).

Again, there is consistent evidence on how poor communication impacts other aspects of care delivery and patient health in general and not only on medication errors. For instance, studies have shown that healthcare professionals' poor written communication affects patients' health, patient-provider therapeutic relations, and caregivers' caring practices (Al-Worafi et al., 2018; Ariaga et al., 2023). Especially in contexts where healthcare literacy rates are low, with less enforcement of patient rights, and high sales of over-the-counter drugs without prescriptions, patient health has been affected by doctors' poor written communication (Kwame, 2023; Moyo & Salawu, 2017). Moyo and Salawu (2017) studied patient-doctor health communication in rural South Africa discovering that patients had difficulty understanding doctors' written communication around prescriptions, dosages, and labels, which affected patient care outcomes. These patients' ability to administer medicines correctly, understand medicine labels and dosages, follow doctors' instructions, or interact with doctors was affected due to incomprehensible handwriting (Moyo & Salawu, 2017).

Moreover, in Nigeria, Igomu (2021) found that doctors' poor handwritten communication constrained the interaction between caregivers and pharmacists, which stressed the caregivers. Such incidents underscore how doctors' hard-to-read handwriting affects not only patients' health but also caregivers' mental well-being (Igomu, 2021) because many caregivers may struggle to comprehend physicians' handwritten prescriptions and drug dosages. Similarly, in a review study, Sadananda (2016) observed that pharmacists, medical assistants, staff nurses, and other medical specialists often misinterpret the physician's hard-to-read handwriting on prescriptions, making these healthcare providers victims of poor handwritten communication.

In Ghana, only two studies have explored this phenomenon. One of these studies examined referral forms accompanying maternal patients to the Tamale Teaching Hospital and found that most referral forms were incomplete or had hard-to-read handwriting, causing delays in patient treatments (Ameyaw et al., 2022). The other study examined perceptions of medical negligence from 78 healthcare providers and 132 patients and discovered that unreadable handwriting, poor communication, and fatigue from healthcare providers significantly influenced medical errors (Muniru & Abor, 2021).

While research on this topic in the Ghanaian context is scarce, the dire impact of medical providers' poor handwriting is well-documented elsewhere, highlighting how healthcare providers' handwriting drives medication errors and poor patient health outcomes. Yet, recent media reports in Ghana revealed negative outcomes of doctors' difficult-to-read handwriting on patient health (Awuni, 2012; GhanaWeb, 2023). For instance, in an August 10 *Health News of Thursday* article by GhanaWeb, the president of the Association of Medicine Counter Assistants of Ghana bemoaned that they are trained to identify drugs that doctors recommend but that the recent increase in bad handwriting by doctors affects their work and patient care (GhanaWeb, 2023). In another media article, Asare et al. (2022) emphasized that hard-to-read handwriting compromises health information quality and patient care, causes unnecessary clinical tests, and delays treatment.

Aside from the above media reports and few studies, most health communication-related research in Ghana is largely focused on spoken (non/verbal) communication practices and how poor (spoken) communication hinders patient-provider interactions (e.g., Amoah et al., 2019; Senayah et al., 2019). Although written communication by healthcare providers, particularly clinicians, physicians, and general practitioners, can have severe consequences for care continuation and patient care outcomes, this area has not been explored in-depth in Ghana.

This study explores the impact of healthcare providers' hard-to-read handwritten

communication on nursing care, patient health, and nurse-patient relationships in Ghana. Two research questions are examined (a) How can care providers' poor written communication affect patient care outcomes? (b) How do clinicians' hard-to-read handwritten communication impact nurses' caring practices?

This paper presents and discusses clinical cases around written communication, noting their effects on patient care outcomes and nurses' caring practices. The influence of written communication on patient care, nurses' caring practices, and nurse-clinician interactions has not been studied in the Yendi Hospital. Therefore, this paper offers a glimpse into the realities of written communication and poor physician handwriting on patient care in the hospital.

Theoretical Framework

Interpersonal communication theory (Wood, 2016) was utilized to interpret the findings of this paper. Different individuals engage in dialogues to co-create meaning and understanding during healthcare interactions. As such, how interpersonal communication is performed may influence caring practices and relationships in clinical settings. Wood (2016) defined interpersonal communication as a process, systemic, and situated interaction between people across time and place, where culture, personal histories, and contextual factors affect how messages are created and interpreted. In this paper, the researcher draws on Wood's (2016) conception of interpersonal communication noises, especially *semantic noises*, which occur when words and linguistic expressions (spoken or written) become hard to understand.

Through interpersonal communication, relationships are built and refined (or not), meanings are co-constructed, and emotions and identities are formed, negotiated, and transformed. Different studies have employed interpersonal communication theory to explore interpersonal relationships in diverse contexts, including in health (Daffern et al., 2012; Donovan & Farris, 2019), parenting and child-parent relationships (Estlein, 2021), and across different stages of life (Fisher & Roccotagliata, 2017). For instance, in a comprehensive literature review study, Donovan and Farris (2019) explored interpersonal communication and coping in cancer care to understand how interpersonal communication behaviour influences coping and interventions in cancer. The study found that based on how interpersonal communication was conceptualized, cancer patients and their carers utilized different coping behaviours, including individual, intrapersonal, and psychological. Similarly, Estlein (2021) investigated parenting styles and the dynamics of child-parent interactions from the lens of interpersonal communication theory. Estlein (2021) observed that interpersonal communication theory provided empirical clarity to the understanding of children's interpretation of their parents' messages, how they communicate their messages to parents, and their parents' interpretation of these messages.

Interpersonal conflicts emerge from communication barriers (i.e., semantic noises), and given that clinical interactions are influenced by people's cultural and contextual circumstances, including healthcare institutional norms, ethics, and practices, this theory is relevant in this paper. Based on the underlying principles of interpersonal communication (i.e., interpersonal interactions involve making ethical choices where meaning is constructed, and relational), it is important to examine how healthcare providers's written communication can transform medical encounters and interactions. Thus, through the lens of this theory, the researcher examines the impact of healthcare providers' written communication on care delivery and patient-provider interactions and relationships.

METHODOLOGY

Study Design

Data reported in this paper comes from a larger doctoral research project that qualitatively explored nurse-patient communication practices and patient rights outcomes in a public hospital in Yendi, Ghana. Although Institutional ethnography (IE) (Rowland et al., 2019; Smith & Griffith, 2022), critical discourse analysis (Reisigl & Wodak, 2016; Wodak, 2015; Wodak & Savski, 2018), and interpretive phenomenology (Smith, 2017; Smith et al., 2009) approaches were implemented in the doctoral project, this paper reports the IE data obtained through ethnographic participant observations of clinical practices and patient-provided interactions to examines everyday social activities and practices in the hospital to understand why people do what they do (Rankin, 2017; Rowland et al., 2019; Smith & Griffith, 2022), especially regarding patient-provider communication practices and clinical interactions.

Participant Recruitment

Participants in the broader study included nurses, patients, and caregivers (non-nurses who cared for patients in the hospital). For participation in the study, nurses, patients, and caregivers were to be 18 years and older and nurses were to have three years of practice experience in the hospital. Additionally, patients and caregivers were included if they could engage in an individual interview for 20 minutes to share their experiences of patient rights and patient-provider interactions. Patients who were not fully recovered or could not engage in interviews for this duration were excluded. All participants had to provide voluntary consent by signing, thumbprinting, or recording oral consent before participating in the study.

Purposive sampling was utilized to access and recruit participants from the Yendi Hospital using word-of-mouth and posters. Posters were distributed on public noticeboards and in-patient wards throughout the hospital. Nurses and patients interested in the study contacted the researcher to be interviewed. The researcher also invited patients who had recovered but were not yet discharged to participate in the study. This flexible sampling approach allows the researcher to recruit participants with in-depth experiences (Creswell & Poth, 2018). Moreover, through purposive sampling, researchers intentionally select participants who can best provide data to inform the research problem under examination (Creswell & Poth, 2018). In total, 11 nurses, 11 caregivers, and 21 patients participated in the doctoral research project to share their experiences of patient-provider communication and interaction and patient-rights outcomes during clinical interactions (for details about the project see Kwame, 2023).

Data Collection Procedures

The field cases reported in this paper are largely from the five-month participant observations conducted across nine in-patient wards from December 2021 to April 2022. Unlike traditional ethnographic studies, a prolonged stay in the field for institutional ethnographic research is uncommon (Rashid et al., 2015). Besides, the researcher is a native of the community where the study was conducted and a competent speaker of the local language. As a result, five-month fieldwork was sufficient to understand the everyday ruling relations and institutional practices enacted in the Yendi Hospital (Rashid et al., 2015; Smith & Griffith, 2022). Also, Rankin (2017, p. 6) maintains that fieldwork in IE study entails three critical things: "talking to people, collecting text, and observing people at work" to understand what people do.

Data shared in this paper were gathered through ethnographic participant observations (Musante, 2015; Spradley, 2016) to understand the everyday interactions, care practices, and institutional cultural norms that regulate patient-provider relationships. A participant observation guide was used. The researcher participated in caring activities where nurses needed his help to move medical equipment, photocopy documents, help patients access

medical units, or translate for them and patients when language barriers occurred. These non-invasive engagements with providers and patients offered the researcher insight into certain everyday clinical and caring practices in the facility.

Participant observations (an average of 5 hours daily resulting in over 400 hours for the 5-month fieldwork) were conducted in all in-patient and outpatient units except for the theatre and antenatal units. These observations were not held in the antenatal clinic because antenatal patients who needed hospitalization were moved to the labour, maternity, or female patient units. Also, there were limited patient-provider interactions in the theatre unit, as a result, no participant observations were conducted there either.

Furthermore, participant observations were limited to the spatial organization of the hospital, nurse-patient-caregiver-clinician daily interactions and communication practices, hospital institutional practices, and power dynamics in clinical interactions. Observations were conducted at the nurse stations and in-patient wards during clinicians' ward rounds and nurses' medication rounds. Besides, the researcher observed interactions in clinicians' consultation rooms and general interactions outside the patient ward (e.g., along the pavements, at the pharmacy, the OPD, the waiting area in the lab, etc.).

Observation notes were documented in a jotter and later typed and categorized according to the place and date of observations. Also, informal chats/conversations with nurses, caregivers, clinicians, and other hospital leaders yielded additional data.

Lastly, data from a focus group with four patients are reported in this paper. These patients were in the same in-patient ward and participated in a focus group to share their perspectives on patient-provider interactions and communication practices.

Data Analysis

These observation notes (field notes) were read several times to gain a deeper understanding of the data and manually coded inductively employing Braun and Clarke's (2006, 2019, 2022) thematic analytic approaches. Communication challenges were identified across all data sets, their context, and their potential impact on patient care and nurses' caring practice. Barriers to clinical interactions specific to healthcare providers' handwritten communication were noted and developed into ethnographic field cases. To ensure the trustworthiness of the findings, nurses were further engaged in informal conversations around some of these observed phenomena to gain their perspectives. Also, excerpts from the focus group data on healthcare providers' written communication complemented the observation data.

All interview data were transcribed verbatim and inductively coded. Like the observation data, interview data were read to understand the data. All communication barriers were noted and those on written communication were selected for this paper. Communication barriers originating from hard-to-read doctors' handwriting were seen in the focus group data, coded, and reported here.

To ensure the findings were rigorous and trustworthy, the researcher stayed in the field for five months and interacted with diverse participants, gaining in-depth knowledge about the phenomenon under study. Preliminary findings were shared with the hospital leaders and community for their feedback. As a quality criterion, nurses and a few patients reviewed their interview transcripts (member checking) and provided feedback on key topics (Creswell & Poth, 2018). Additionally, the researcher interacted with the doctoral research committee members throughout the fieldwork and data analysis stages to promote the trustworthiness of the study's findings.

Ethical Approvals

Ethical approvals for the study were gained from the University of Saskatchewan ethics committee in Canada (Beh-ID: 2690) and the Ghana Health Service Ethics Committee (GHS-ERC:005/11/21). The Yendi Hospital permitted all research activities following the Ghana Health Service approval. Furthermore, all institutional and local community ethical protocols were observed. Participants provided voluntary consent to participate in this study after reading the consent forms or when the researcher explained the forms to them in Dagbani (for those who could not read in English). Nurses and some patients and caregivers signed the consent form while a few other patients and caregivers consented by thump-printing the consent form. All participant-identifying attributes were removed from the data and replaced with pseudonyms or serial codes as reported in this paper. However, in certain instances, the names of patient wards were retained to provide context to participant observation data (see Kwame, 2023).

RESULTS

A significant communication-related theme from the data was poor written communication. After all the barriers to effective care delivery in the facility were noted, the researcher observed that nurses and patients had problems interpreting healthcare providers' written notes. As such, four critical themes (field cases) underlying poor written communication and their impact on care delivery and nurse-patient interactions were identified.

Scripting the Patient's Life

In a maternity care setting, two nurses who attended to a maternal patient on admission for delivery faced a situation of hard-to-read written communication in the fieldnote below.

> *A doctor wrote a prescription note in a patient's folder, but the nurses on shift could not read it. They had to ask another doctor who was on ward rounds to help them get the name of the drug. When the doctor explained it to them, Nurse O (pseudonym) asked the doctor "What wrong have we done you people? We will be much happier if you (doctors) make your writings clear and easy to understand." The nurse indicated that if doctors and clinicians make their writings clear and easy to read and understand, that will help nurses to better care for patients. (Field note, documented on Thursday, January 27, 2022).*

This field case has two implications: one for patient care and the other for nurses' professional practice. Firstly, the nurse could have served the wrong medicine to the patient if there was no doctor in the ward to explain that handwriting to them. This situation could have impacted the patient's care outcome, recovery, or the unborn baby since this was a maternal patient, thereby putting her life on the line. Secondly, the nurse's inability to understand the handwriting could have prevented him from serving the patient, leading to frustration or a face-threat (feeling embarrassed) if the patient had realized the nurse did not understand the doctor's handwriting. The simple act of writing, which many may not think so much about, impacted the nurses' ability to serve the patient. Through the lens of interpersonal communication theory, the semantic noise affected the nurse's ability to decipher the meaning of these written notes thereby creating an interpersonal communication bridge between the prescriber and the nurses, predisposing them to career risk and identity doubt as competent nurses.

What is the Dose?

This theme (field case) illustrates nurses' experiences dealing with poorly written

communication in patients' folders, potentially leading to missed patient medication and care. This case was also observed in a maternity care setting. A nurse who started their afternoon shift attended to a patient but could not render the needed care due to a written communication barrier, captured below during a participant observation.

> *Today, a nurse didn't understand entries in a patient folder. It was unclear whether the entries were maintenance or loading doses for the patient's condition. The nurse noted that about ten entries were made in the folder, but the maintenance dose could only be six in total. Also, the loading dose could not be ten. The nurse had to call another nurse who worked during the morning shift to understand what the entries in the folder meant (Field notes, documented January 24, 2022).*

The semantic noise, represented by the poorly written communication (i.e., the dose entries in the folder), delayed the patient care and prolonged nurses' caring time as the above nurse had spent time figuring out what the data in the patient folder meant. Nurses face significant patient turnout in this hospital, which demands that they act quickly in a fast-paced healthcare context, where time efficiency is of the essence. Thus, nurses' inability to read and understand clinicians' or other nurses' written notes in patient folders can add to their stress in caring for patients or strain their interpersonal relationships with patients.

The Nurse Must Answer to Me

In a male patient ward, a clinician attended to a patient who had co-morbid conditions, one of which required a nutritional plan. The clinician writes out the care plan in the patient folder. However, the next day when the clinician came to the ward to review the patient's case, she realized that the nutritional component was not implemented. This incident was captured during participant observation.

> *A clinician refused to review a patient's case today in the male ward. This clinician, who specializes in nutrition and infectious diseases, came for a ward round and refused to review a patient's folder because the nurses did not implement the care plan she recommended in the patient's folder. According to the nurses who served the previous shift, they did not understand the clinician's written notes, as a result, they did not implement that recommendation. They wanted to confirm with the clinician what was written in the folder when she came for her next review since they could not reach her on the phone. (Filed note, documented, January 12, 2022)*

In the above case, the clinician was angry and refused to attend to the patient, insisting that she wanted the nurse who served the patient to explain why they did not implement her review instructions. When the nurses were discussing this issue at the nurse station many lamented the difficulty they face in understanding clinicians' handwriting. The nurses indicated that even some nurses have difficult-to-understand handwriting too; noting that one of their colleagues usually finds it difficult to read or understand his own handwritten notes.

The above case illustrates the potential impact of hard-to-read written communication on

patient care and recovery. The semantic noise in the clinician's writing affected understanding and the nurses' ability to serve the patient. The care routine the nurse did not implement was about a nutritional plan, had it been critical medication or some other care routine with a significant outcome, the patient's health and life or recovery could have been affected.

Not that I can't read, but their handwriting is hard to read

A few patients also expressed worry about doctors' written communication further shedding light on how poorly written communication can deny patient participation in the care process. A focus group participants related the following regarding clinicians' written communication.

> *In the maternity ward, when the doctor writes, unless you take it to the nurses, you cannot understand what has been written. So, you will be sitting until you can get a nurse to explain to you that 'this or that is what the doctor wrote, 'then you can go for what the doctor requested. (FGP3)*

Another patient added

> *Mostly when the doctors write and I take it, I can't read it. Meanwhile, it's not that I don't know how to read, but their handwriting is difficult to read. So, when they write, they should explain what has been written to the patient. That will at least help us to understand our health condition. (FGP4)*

Documenting patient care and other written communication may hinder effective care delivery and patient engagement in the care process. The above data suggests that written communication barriers (semantic noises) can delay timely care provision. Besides, patients' inability to understand healthcare providers' handwriting can limit their participation in the care process and their self-care practices. Unclear and hard-to-understand written communication can threaten patient safety through medication and dosage errors by nurses. Such interpersonal communication challenges can also strain the relationship between patients and nurses given that nurses are the ones to execute the clinicians' and doctors' prescriptions.

DISCUSSION

This paper reports field cases of incomprehensible written communication from a hospital in Northern Ghana, which are discussed regarding their implications for patient care and nurses' caring practices.

When nurses cannot read and understand physicians' and clinicians' written notes in patient folders, their ability to provide effective patient care is affected (Kolanowski et al., 2015), which may strain their interpersonal and professional relationships with patients. Patients' health, life, and safety are threatened by interpersonal communication noises (in this case, semantic noises) since medical errors are prone to occur. Moreover, poorly written communication undermines person-centred care. Kolanowski et al. (2015) reported that to provide person-centred care for older adults with experiences of dementia in a time-pressured workspace care providers preferred oral communication to written communication as a means of information exchange. Nurses administer and execute doctors', physicians, and clinicians' prescriptions and other clinical instructions, as a result, if they cannot read or understand these notes and instructions, patients suffer the consequences, as research evidence shows that miscommunication and information ambiguity increase medical errors (Allibaih et al., 2022; Bressan et al., 2019; Sadananda, 2016).

Aside from increased medical and clinical errors, this study found that poor handwriting delays patient treatment and continuity of care, and diminishes information quality and accuracy, confirming previous research findings (Modi et al., 2022). The nurse who did not understand entries in the patient record spent time calling his colleagues who worked the previous shift to understand what was written in the patient folder to render care to the patient, thereby delaying care. This finding corroborates the results of a 5-year retrospective clinical audit study conducted in an Australian pediatric public hospital which found that obscure written communication (i.e., misinterpretation, misreading, and unclear writing) constituted 30% of all communication-related factors that delay timely care and negatively impacted patient safety (Manias et al., 2019).

Furthermore, patients' inability to read the handwriting of healthcare providers can limit their participation in the care process, adherence to medication, and self-care practices, leading to delayed recovery and negative perceptions of care (Igomu, 2021; Moyo & Salawu, 2017). Research shows that when patients are engaged in the care process, their resiliency for illness management and quality of care improves (Reyna et al., 2015; Sterponi et al., 2017). Nonetheless, these outcomes are impossible if patients cannot read or understand their medical records due to health professionals' bad handwriting and other interpersonal communication barriers.

Medication errors have dire consequences on healthcare professionals, predisposing them to legal sanctions (Lauren, 2024; Obaro, 2022; Sadananda, 2016; Samaritan, 2010). Obaro (2022) argues that medical practitioners can face legal actions when their illegible (unclear) handwriting violates the ethic of duty to care, leading to injury or permanent disability among patients. Similarly, Samaritan (2010) reported how medical doctors faced legal actions and paid huge sums of dollars in fines for medical errors due to bad handwriting. Lastly, Obot (2019) illustrated and discussed numerous examples of the legal consequences of doctors' illegible handwriting on patients' care and lives, resulting from technical-based medical errors.

Although Ghanaians have not actively engaged with the legal systems in cases of medical negligence, errors, and omission/commission; nonetheless, anecdotal evidence suggests that individuals are beginning to reason in this direction (GhanaWeb, 2023; Muniru & Abor, 2021). Besides, increasing incidents of medical negligence and malpractices in Ghana have forced researchers and healthcare policy experts to advocate for the institution of healthcare laws to deal with these events to reduce avoidable harm caused to patients (Owusu-Dapaah, 2015, 2021; Zutah et al., 2021). Similarly, Sadananda (2016) has reported several instances of how care providers' poor written communications have earned them legal fines, noting that about six states in the US have "passed legislation making doctor's illegible handwriting a fineable offence" (p. 41).

Bad handwriting can affect nurses' clinical practices and interpersonal relationships with doctors, physicians, and clinicians. Amudha et al. (2018) explored communication between nurses and doctors in Malaysia, revealing that over 50% of nurse participants reported having challenges with doctors' handwriting and were frustrated getting these doctors to explain clinical notes. These experiences affect nurses' professional image and relationships with doctors. Moreover, such communication challenges widen the power distance between nurses and doctors (Amudha et al., 2018), with the potential for interpersonal conflicts. In this present study, a clinician refused to attend to a patient because the nurses did not implement her review comments. The clinician, acting in a power position, demanded an explanation from the nurse who cared for the patient as to why they did not implement her review notes.

Moreover, challenges with understanding clinicians' written notes can add more stress to nurses, diminish their confidence and self-

esteem, and reduce nurses' caring time for patients. Additionally, a nurse's professional image can be questioned when patients and caregivers realize they cannot understand doctors' written notes, thereby threatening their face and mental health.

Implications for Healthcare Practice and Management

The consequences of bad handwriting on patient care and health have triggered the need for electronic patient record-keeping globally (Albarrak et al., 2014; Kolanowski et al., 2015; Mensah et al., 2023). Electronic medical record keeping is argued to reduce clinical errors, poor documentation practices, and occupational stress among healthcare providers (Mensah et al., 2023), which the Ghanaian Ministry of Health must invest in. However, electronic recording-keeping in resource-poor settings may be constrained by inadequate infrastructure, unstable power, high implementation cost, erratic internet connectivity, and low technological proficiency (Essuman et al., 2020), preventing effective utilization in many developing countries. Moreover, Sterponi et al. (2017) argued that paper-based written communication still holds significant value in medical discourse. As such, physicians and clinicians are encouraged to write legibly to enable nurses to carry out their recommendations without errors (Amudha et al., 2018; Sadananda, 2016).

Physicians, clinicians, and doctors' writing style may be a discursive practice to maintain prestige, power and identity in the professional space (Ampofo et al., 2022; Kwame, 2023). Illegible handwriting is argued to result from time constraints on physicians and their desire to capture much information about patients (MTN Editorial Team, 2022; Isola, 2018), nonetheless, the health impact of unclear and hard-to-read handwriting creates medical complications with significant negative consequences on patient lives. Hence, Isola (2018) suggested that healthcare systems should allow more time for physicians to attend to patients, hoping they will make time to write their notes and prescriptions legibly.

Difficult-to-read handwriting by healthcare providers affects patients' health even outside the hospital. In Ghana, where many people buy medicine and drugs through over-the-counter sales, patient health is at risk of medication adverse effects. Not many licensed chemist stores have professionals with the same medical education as doctors, physicians, and clinicians; as a result, difficulty understanding written notes on prescription forms could impact patients' health significantly.

To minimize the health impact of poor handwriting, it is recommended that physicians, clinicians, and doctors in Ghana and elsewhere get more training on handwriting while in medical schools or participate in in-service training to improve their handwriting (Allibaih et al., 2022; Lazzari, 2012; MTN Editorial Team, 2022; Naik, 2016; Sadananda, 2016). Sadananda (2016) advised doctors and physicians to practice writing a few prescriptions very neatly and legibly every morning, writing prescriptions in bigger font sizes, and minimizing writing long case notes to reduce the pressure to write fast. Physicians and doctors must avoid using nonstandard abbreviations and decimals and educate patients and caregivers about written dosages (Samaritan, 2010). Healthcare administrators must audit physicians, doctors, and clinicians' clinical notes to determine who needs support to improve handwriting. Doctors, physicians, and clinicians should be provided with digital note-taking tools to help them make clear case notes. Implementing these remedial interventions can eliminate bad handwriting and promote efficient written communication.

CONCLUSION

This paper presented and discussed healthcare professionals' written communication and its impact on patient care and nurses' professional practice. The results highlighted how illegible handwriting by clinicians, doctors, and physicians hinders patient participation in their care process, care quality and continuity, delayed care, and medication errors. The study findings also unearthed the impact of unclear

written communication on nurses' caring time, self-esteem and confidence, and relationships with patients and clinicians. In conclusion, recommendations to minimize bad handwriting among care providers have been offered.

A major limitation of this study is that the data reported here are largely from participant observations, although a few patient interview data are reported. Also, given the context-specific nature of the findings, caution should be taken in generalizing these findings, despite that the results are consistent with previous research findings.

DECLARATIONS

Declaration of conflicts of interest

The author declares that there is no conflict of interest.

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Author contributions

AK is the sole author of this paper.

Availability of Data and Materials

Data used in this manuscript were part of a doctoral research project and can be made available from the corresponding author upon reasonable request.

Ethical Approval

The study gained institutional ethics approval in Canada and Ghana and was duly reported in the manuscript.

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