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A Systematic Review of Factors that Contribute to the Quality of Nursing Documentation

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Abstract: This systematic review study was conducted to review the literature about issues related to nursing documentation. Nursing documentation is considered a very important step in the nursing career due to its vital importance in the medical process and it mediates the medical language between physicians and nurses. Studies published in nursing documentation were reviewed between 2002 and 2016. In total, 150 papers resulted from the search, out of which 97 articles were used to form the body of systematic review. Out of the 97 papers, further focus was given to relevant parts that directly addressed the question on quality of nursing documentation what factors that affect/associate to it and how the factors affect/associate to it. Taken together, the study put focus on important topics in nursing documentation.

Key words: Nursing documentation, review, systematic review, factors, accuracy, nursing career

INTRODUCTION

Background: Nursing documentation holds great significance to the quality of patient care (Jefferies *et al*., 2010). The nursing documentation is regarded as a means of communication for determining the decision making processes for safe and effective healthcare provision (Ammenwerth *et al*., 2003; Karkkaninen and Eriksson, 2003; Jefferies *et al*., 2010). In views of (Cheevakasemsook *et al*., 2006), nursing documentation provides a legal evidence regarding the medical process as well as the healthcare outcomes. The documentation offers a tool for assessing the effectiveness and efficiency of the patient care. Also, the nursing documentation provides evidence for ethical assurance and research in support of advancing nursing knowledge, benchmarks and clinical practice (Ellingsen and Munkvold, 2007).

There is electronic and paper based nursing documentation (Anonymous, 2012). Data/information from nursing documentation allows for the communication and continuity of patient care as well as providing ground for risk management, quality enhancement and assurance (Needleman and Buerhaus 2003). The legal provisions for nursing documentation is in its use in a court of law. The documentation can further be used for purposes of resource management and funding. In spurring research, nursing documentation is vital in developing interventions as well as assessing the patient care outcomes (Anonymous, 2012). The reason behind nursing documentation is to capture the provided patient care and subsequent patient responses.

Rationale: Owing to the evident significance of nursing documentation, it was imperative in this study to systematically review factors that affect the quality of nursing documentation as an area that researchers have neglected to analyse. It is reasoned in this study that there are factors that affect the quality of either paper-based or electronic nursing documentation. The content of this systematic review was guided by the stated aim, design, search methods/strategy, quality appraisal, data abstraction and synthesis.

Aim and objectives: The study aimed to identify and synthesize the factors that contribute (associated) to the quality of nursing documentation. Hence, the following comprised the study questions:

- What human and non-human factors that contribute/associate to the quality of nursing documentation?
- How do the human and non-human factors contribute/associate to the quality of nursing documentation?

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Design: In accordance to the mentioned aim and questions, the study employed a qualitative design/ approach to systematic review. The qualitative design entailed considering only qualitative aspects in cross-sectional studies, longitudinal studies and evidence-based studies.

MATERIALS AND METHODS

Eligibility criteria: The eligibility for the reviewed studies were three-fold: publication year, publication language and the content about nurse documentation. All studies that were published in English from 2002-2016 and had contents about nurse documentation were legible for this systematic review.

Information sources: The researcher conducted an electronic search on relevant online studies published/endorsed by the Cochrane Library, CINAHL, ProQuest, Nursing Resource Centre, Campbell, Briggs, Medline and Wiley InterScience.

Search strategy: The researcher used the key search phrase such as 'quality of nursing records, 'quality of nursing documentation', 'nursing documentation standards' and 'nursing documentation principles' to identify the relevant articles for this study. A combination of the key search phrases and the name of data sources such as Cochrane Library, Campbell, Briggs, Medline and Wiley InterScience were used to refine the search to access specific online articles published by the respective source. The search criteria was restricted to the articles that were published from 2002-2016. The resultant articles were selected only if they were published in English.

Study selection: The researcher employed a set of inclusion criteria to obtain only relevant set of studies. The considered literature entailed articles about principles and standards of nursing documentation, studies on quality of nursing documentation, reports on nursing documentation, articles related to systems/process of nursing documentation, audit studies on nursing documentation practices, nursing documentation requirements/guidelines, contents of nursing documentation and challenges in nursing documentation. The exclusion criteria for the articles that did not discuss anything regarding nursing documentation. Additional exclusion criterion entailed articles evaluating/related to the quality of other healthcare topics other than nursing documentation. Also, duplicated papers were excluded to avoid redundancy in the content, thus, saving time for the overall study.

Data collection process/abstraction: To extract relevant content from the selected studies for review there was focus on the aim, design and objectives on nurse documentation. Additional, consideration was given to the country where the study was conducted (English-speaking nations), the study setting (hospitals and institutions) and the qualitative aspects of nurse documentation systems, processes, outcomes and challenges. Hence, the study focussed on qualitative results with descriptive data about factors that associate with nurse documentation.

Data items: The study used nurse documentation as the primary data variable for the search. Additional, data items entailed how parts with primary variable addressed nurse documentation challenges and nurse documentation quality. The assumption in considering nurse documentation as the primary data item in all the selected studies was due to the common documentation standards/principles that should apply to patients with chronic disease.

Risk of bias in individual studies: The individual studies reported similar limitations in three categories. The studies were all published in English. Thus, the results of the systematic review are more applicable to English speaking nations than the non-English speaking nations. All the studies did not use any statistical procedures but qualitative approach which this study also followed to aggregate, report, analyse and conclude on findings/results. Also, the results of the systematic review were thus, brief without detailing the content of the original papers. As was noted, these limitations did not signify devastating risk of bias. As such the researcher did not have to develop any way to reduce their impact on the results of this systematic review.

Summary measures: The summary variables entailed qualitative aspects including the nurse documentation standards, principle, processes and resources.

Synthesis of results: Neither quantitative nor meta-analysis was not appropriate for data synthesis. This was due to the qualitative nature of this study's aim. The selected papers for this study were grouped according to the factors that are presented as having an impact on the quality of nurse documentation. However, some factors were not obviously noticeable in the papers despite the studies relationship with the aspects, systems, processes, outcomes and challenges of nurse documentation. Hence, reflective reasoning was applied to identify the hidden factors which could link to the quality of nurse documentation. Consequently, a narrative synthesis of the extracted data was conducted and

presented with their relevant thematic headings as factors that associate with the quality of nurse documentation.

Risk of bias across studies: The individual studies reported similar limitations in three categories. The studies were all published in English. Thus, the results of the systematic review are more applicable to English speaking nations than the non-English speaking nations. All the studies did not use any statistical procedures but qualitative approach which this study also, followed to aggregate, report, analyse and conclude on findings/results. Also, the results of the systematic review were thus, brief without detailing the content of the original papers. As was noted, these limitations did not signify devastating risk of bias. As such the researcher did not have to develop any way to reduce their impact on the results of this systematic review.

Additional analyses: There were two broad categories of factors that the additional qualitative analysis addressed. The two groups included human factors and non-human factors. Further, analysis on the two broad classes of factors entailed the identification of specific resources and processes/practices under each factor category.

RESULTS AND DISCUSSION

Study selection: The inclusion and exclusion criteria described above resulted in aggregating quality papers that formed the content of the result chapter. In total, 150 papers resulted from the search, out of which 97 articles were used to form the body of systematic review. Out of the 97 papers, further focus was given to relevant parts that directly addressed the question on quality of nursing documentation what factors that affect/associate to it and how the factors affect/associate to it.

Study characteristics: The reviewed studies had qualitative designs and carried out in different settings; Inside and outside formal healthcare (hospitals) and institutions.

Synthesis of results: The systematic review revealed a number of factors that affect the quality of nursing documentation. Overall, the factors were both human and non-human in nature. The factors were identified to emerge from both internal and external factors to the healthcare providers. Lastly, the factors broadly related to social, economic and technological aspects. The emergent search outcome were summarized under different themes and reported in a narrative format. The presented results were either directly or indirectly highlighted by the respective researchers of the studies as factors that affect the quality of nurse documentation. The summary of findings comprised eleven factors as detailed.

Accuracy: On a daily basis, nurses provide varied client education on which studies concur that accurate nurse documentation of such education is vital for their continuity and communication (Hullin *et al*., 2008; Idvall and Ehrenberg, 2002; Irving *et al*., 2006; Jefferies *et al*., 2010). The accuracy of recordings on planned and unplanned teaching as well as details of materials and methods of education is key in ensuring quality nurse documentation. In case of incidents such as patient falls, injuries from needle stick and medication errors that put patients at risk, nurses have the responsibility to separately document the cases in incident report and the patient's medical record (Potter and Perry, 2010). The documentation should be accurate and concise as well as factual and unbiased (Tornkvist *et al*., 2003; Bjorvell *et al*., 2002). Here, the code of ethics restricts nurses not to use terms such as 'Incident', 'Error'' or 'Accident'. Nonetheless, errors can arise from inaccurate transcriptions (Tornkvist *et al*., 2003; Bjorvell *et al*., 2002). As a result, the restrictions may make the records vague and unclear to understand what exactly occurred and the appropriateness of the subsequent measure taken to salvage the client situation. Thus, it may turn out that the recorded information is not directly linked to the type and magnitude of care given to the patient. Moreover, the registered nurses are required to ensure that documentation through interdisciplinary tools accurately portray unique contributions to the patient care.

Nurse documentation includes both objective and subjective statements regarding the nursing process. The use of objective statements should be supported evidence/reality alongside subjective statements from client's feedback and family/caregiver's views. The subjective statements should be accurately documented in quotes to convey what actually happened to enhance the understanding of the overall patient care from documented information. In this view, quality nurse documentation should be void of generalizations as well as vague expressions and phrases (Tornvall *et al*., 2004; Croke, 2003; Korst *et al*., 2003; Poissant *et al*., 2005). To achieve the required accuracy, it is recommended that nurses provides supporting facts in their documentation.

In this way, documentation of value judgments as well as unfounded conclusions and culturally insensitive statements have negative impact on the quality of nurse documentation (Anonymous, 2010; Tornvall *et al*., 2004; Croke, 2003). For this reason, quality nurse documentation can be judged from the choice of words used as well as the level of objectivity reflected in their contents that which can be verified (Anonymous, 2010).

Overall, five elements emerged from the selected studies as factors that influence the accuracy of documenting nursing diagnosis. The factors include the use of guided clinical reasoning and pre-structured documentation forms. Additional factors are the educational background in nursing, use of classification systems (e.g., NANDA) and the use of computer based patient documentation and patient care plans (Bjorvell *et al*., 2002). The five factors have positive impact on nurse documentation as they improve the accuracy. Also, with consistent theoretical and practical training, nurses gain conceptual and procedural knowledge that forms the basis for accurate documentation diagnoses.

Legibility and spelling: Legibility and correct spelling are aspects of accuracy. A competent nurse documentation that reflects quality attention to detail is legible (Anonymous, 2007; Oroviogoicoechea *et al*., 2008; Thoroddsen *et al*., 2009). The legibility of nurse documentation helps to determine whether the correct spelling has been used (Anonymous, 2007; Oroviogoicoechea *et al*., 2008; Thoroddsen *et al*., 2009). Legibility in nurse documentation also helps to eliminate errors in subsequent steps in the nursing process (Oroviogoicoechea *et al*., 2008; Thoroddsen *et al*., 2009). Illegible and misspelt words in nurse documentation can cause misinterpretation of content and hence, resulting in adverse effects to the patient, especially from prescribed medication that have more or less similar names (Oroviogoicoechea *et al*., 2008; Thoroddsen *et al*., 2009; Potter and Perry, 2010).

Timing: Just in the case of legibility and spelling, timing factor is an aspect of accuracy. Timing is a significant factor in achieving accurate nurse documentation which is an element influencing the quality of documentation (Anonymous, 2010; Potter and Perry, 2010; Anonymous, 2009). The amount and frequency of nurse documentation is controlled by factors such as facility or agency policies or procedures, complexity of patient's health problems, patient's risk exposure and the level of risk involved in the patient care. To enhance the accuracy and credibility, nurse documentation should be completed as immediate as possible to the time of care a process called concurrent nurse documentation (CARNA, 2006; Cusack *et al*., 2012; Kennedy, 2013)). Hence, nurse documentation should only be completed as soon as an event actually occurs (Cusack *et al*., 2012; Kennedy, 2013). It is important for nurses to document events in a chronological order so as to reveal significant patterns in the patient's health status. The health patterns are employed to enhance healthcare outcome which is the main goal behind quality nurse documentation. Chronological documentation enhances clarity in communication which again enables other healthcare providers to understand the provided services in view of diagnoses data as well as the outcomes and patient's responses to the care. In case of late entries, the facility or agency policy should give guidance on how to go about it, preferably when a nurse is able to clearly recall the event or care. Studies reported that nurses save time in documentation through computer compared to manual system (Ammenwerth *et al*., 2003; Bakken, 2007; Bjorvell *et al*., 2003; Cheevakasemsook *et al*., 2006). To enhance the quality of nurse documentation, through time efficiencies there is need to employ standardized forms though some systems may require more documentation. In the use of standardized computer-based forms, documentation should be complete, clear and concise.

Technology: Technology is the framework that influence a number of factors including collaboration, accuracy and timing. Technology use in nurse documentation was voiced following the drawbacks of traditional paper-based nurse documentation which was more repetitive and subject to manipulation (Cheevakasemsook *et al*., 2006; Yu *et al*., 2008). The paper-based nurse documentation had proved to be illegible and incomplete with individualized patient information (Ammenwerth *et al*., 2001; Whyte, 2005; Urquhart *et al*., 2009). The drawbacks linked to paper-based records reduced the quality of nurse documentation and hence, could rarely achieve the ultimate goal of enhanced patient outcome.

Thus, the reviewed studies showed that the use of IT (Information Technology) enables nurses to capture patient data in a formalized nursing language and structured date format (Anonymous, 2007; Ehrenberg and Birgersson, 2003; Ehrenberg and Ehnfors, 2001; Ellingsen and Munkvold, 2007). Thus, enhanced quality in nurse documentation was linked to the use of electronic documentation systems that enables nurses to have enhanced access to more clear, legible, up to date and complete patient information (Cassano, 2014; Oroviogoicoechea *et al*., 2008). However, this relies on the design of Information System (IS) in which case a

well-designed IS ensures faster and easier flow of information necessary for efficient documentation processing (Kwok *et al*., 2009; Cassano, 2014). The use of electronic documentation provides efficient communication among the clinicians and enables nurses to have diligent coordination and monitoring of documentation progress and flow (Weston and Roberts, 2013; Bosman *et al*., 2003). The use of computer software further allows nurses to quickly gather, store and retrieve quality patient data integrated with nursing resources (Carroll *et al*., 2012; Moss *et al*., 2007).

For instance, the classification structures such as NANDA-I classification and the emerging forms of recording (PES format) when integrated with a matching electronic resources yields more accurate nurse documentation (Carroll *et al*., 2012). Therefore, it is possible to achieve quality electronic nurse documentation.

The use of IT in nurse documentation has reported decreased workload and fatigue that initially led to poor documentation (Hullin *et al*., 2008; Idvall and Ehrenberg, 2002; Irving *et al*., 2006; Jefferies *et al*., 2010). Poor nurse documentation exposes patients to more harm due to errors in the paper-based patient records. Studies noted hospital associated pressure ulcers as the most common medical error costing healthcare providers billion dollars annually. As the HAPU requires a complete and interdisciplinary measure, EHR supports quality nurse documentation for patients at risk by integrating various evidence-based interventions into one electronic flowsheet for nurse. Thus, studies concluded that Electronic Health Records (EHR) eliminate nurse documentation that does not directly yield improved patient care (Lee, 2007; Elkind, 2009). In this view, quality documentation of basic patient care requires the use of EHR technology. The use of EHR enables reflective review of patient records/database and hence, identify gaps in professional documentation. Consequently, the use of EHR technology in nurse documentation allows for systematic improvement on documentation and care.

With standardized systems, integrated in to the clinical documentation system, it is possible to have a rigorous evaluation of nurse documentation (Urquhart *et al*., 2009). However, rigid observance of standardized documentation checklists and guidelines presents a challenge as it does not allow for sensible thought from nurses (Harwood and Giles, 2005).

Collaboration: As highlighted under technology, collaboration is a core aspect in ensuring quality nurse documentation (Anonymous, 2009, 2007; Whyte, 2005; Yu *et al*., 2008). The collaboration can occur among the nurses, between nurses and patients, between nurses and the patient's family/caregiver and between nurses and other healthcare professionals (Whyte, 2005; Yu *et al*., 2008). The creation of an interdisciplinary documentation is key to eliminating duplication as well as ensuring efficient utilization of time and enriched patient's outcomes. Studies noted that collaborative nurse documentation ensures that the healthcare professionals share common documentation tools such as clinical pathways, thus, ensuring consistency and completeness (Whyte, 2005; Yu *et al*., 2008) which are key aspects of quality nurse documentation (Dillon *et al*., 2005; Karkkainen and Eriksson, 2005). In this way, comprehensive nurse documentation on patient assessment lessen the likelihood of errors. Nonetheless, errors can still arise from client outcomes due to poor communications.

Ethics: As nurses collaborate in the documentation process, ethics forms the core aspect that govern nurse behaviours. In light of the code of ethics for registered nurses, it's an ethical responsibility of any nurse to respect patient's informed choice on their preferred treatment and lifestyle (Wang *et al*., 2011a, b; Anonymous, 2008). Nonetheless, the nurse is expected to document the patient's risk-taking behaviours and not to have judgement on the patient choice of behaviours. In this view, the nurse should not document a patient as "non-compliant" but rather the objective and descriptive data about the patient's behaviour (Tornkvist *et al*., 2003; Bjorvell *et al*., 2002). The code of ethics for nurses also requires nurses to document response to the patient's risk taking behaviour as well as the provided education towards the consequences of the risk taking behaviours of the patient. However, respecting the patient's choice on treatment and lifestyle may turn out to be risky to the patient's overall health and hence portraying the nurse documentation as 'poor and substandard' (Anonymous, 2010; Whyte, 2005; Yu *et al*., 2008).

Policy: Just as technology, policy effect is on all other factors because it controls the way in which nurses are required to collaborate to achieve accurate and acceptable documentation (Harper, 2007; Kirkley and Renwick, 2003). Nurse documentation begins with a specific date and time and closes with a designated nurse signature (Anonymous, 2005a, b, 2011a, b). Thus, a facility or agency policy should support the method used in documenting the date and time, else, the documentation may not make sense to users within the healthcare chain (Korst *et al*., 2003; Poissant *et al*., 2005).

As a policy, paper-based nurse documentation should be in black ink to facilitate optical scanning or photocopying (Korst *et al*., 2003; Poissant *et al*., 2005). In this way, the use of pencil, coloured highlighters or gel pens reduces the quality of nurse documentation. The policy further requires that the nurse documentation should not contain blank or white space to restrict others from adding information (Korst *et al*., 2003; Poissant *et al*., 2005). The accepted approach is to strike a single line through the blank spaces or filling them with policy approved comments or symbols (Anonymous, 2010; Korst *et al*., 2003; Poissant *et al*., 2005).

Inaccurate entries or errors in nurse documentation cause inappropriate decisions that may harm the patient (Anonymous, 2011; Ohlen, 2015; Anonymous, 2008, 2002). In such scenarios, it is required that the necessary changes or additions are done in accordance to the facility or agency policy (Anonymous, 2011; Ohlen, 2015). In this process, the adjusted content should be retrievable or remain visible to understand the content and purpose of the correction. The facility or agency policy needs to offer guidance to the nurses on the acceptable processes of error correction (Ohlen, 2015; Anonymous, 2008, 2002). It implies that without strong and clear facility or agency policy, the quality of nurse documentation can be affected in the rise of mistakes/errors that need change/adjustment. Also, the protection of documentation integrity requires that the additions or changes should be carefully documented without the removal of any page (Anonymous, 2008, 2002). A request to change or add documentation can be made by an alternate nurse or professional in which case the primary author of the documentation should only refer to facility or agency policy to maintain the required quality level (Anonymous, 2011; Ohlen, 2015). Even though, nurse documentation should be done as soon as the event occurs or care is provided, delayed documentation can be done when there are two nurses documenting on the patient. In such case, delayed entries of a patient record should be done in agreement with the facility or agency policy for it to be clinically significant (Anonymous, 2008, 2002; Ohlen, 2015). Also, lost record entries should be rectified in accordance to the facility or agency policy (Anonymous, 2007; Korst *et al*., 2003; Poissant *et al*., 2005). In this case, if a nurse cannot recall the event or care given, the new entry in the documentation should state the loss of the specific information for that given time, event and care (Anonymous, 2007; Korst *et al*., 2003; Poissant *et al*., 2005). While facility or agency policies on nurse documentation is followed to obtain a practical and reasonable documentation standard, nursing documentation should be in-depth, frequent and more comprehensive in accordance to the level of patient's illness and risk exposure (Anonymous, 2007; Korst *et al*., 2003; Poissant *et al*., 2005).

Complexity: As other factors were generally viewed to have positive impact on the quality of documentation, complexity factors were perceived to have negative impact on documentation quality. Studies have shown that complexity of a patient condition has an impact on the accuracy of documenting nurse diagnosis (Wells *et al*., 2016; Swick *et al*., 2012; Anonymous, 2012; Poon *et al*., 2010; Urquhart *et al*., 2009). There are three broad categories of factors in the literature that contribute to the complexity of patient's situation: first is cultural differences experienced while expressing the patient's needs, second factor is severe diagnosis that occurs in specialty areas and third is the way a patient expresses severe diagnoses (Wells *et al*., 2016; Swick *et al*., 2012; Anonymous, 2012; Poon *et al*., 2010; Urquhart *et al*., 2009). Cultural difference presents challenge to nurse documentation due to lack of clarity on what patient's data to record, format to be used and how to use them to build strong correlation between the care and patient outcome (Wells *et al*., 2016; Poon *et al*., 2010; Urquhart *et al*., 2009).

Environment: Just as complexity which took rather a neutral ground in determining the documentation quality, environment was also, viewed in a similar manner. The patient's complexity and accuracy are heightened or lessened by the attributes of workplace environment (Bjorvell *et al*. 2002; Saint *et al*., 2005). The reviewed literature showed six environmental factors that affect the quality of nurse documentation. First is the number of patients assigned to a single nurse. Second is the workload and time needed for diagnoses. Third is the use of medical model. Forth is the amount of administrative activities. Fifth is the physical reaction to diagnoses and lastly is the structure of information to be used. In this view, lack of or inadequate administrative support and time as well as much workload level had been established as the major barriers facing nurses in quality documentation (Harwood and Giles, 2005). Additionally, the context of medical-situational is one of the significant factors that affect the accuracy of diagnostic documentation. Also, the way a nurse processes opinions of physicians on patient diagnosis affect the way nurses document their findings (West, 2002, 2004; MacDavitt *et al*., 2007). Close interaction and attention to physician's views make nurses use medical language rather than nursing language and hence this impact on the quality of nurse documentation (West, 2002, 2004;

MacDavitt *et al*., 2007). At time, resistance from physicians against implementing the nurse's diagnoses obstruct efforts towards nursing education or resource improvements in nurse documentation (West, 2002, 2004; MacDavitt *et al*., 2007).

Attitude: The theme of effectiveness, accuracy, ethics, collaboration, policy, legibility and spelling, technology, complexity and environment are all affected by the attitude, experience and knowledge of nurses (Lavin *et al*., 2015; Wells *et al*., 2016). In spite of the benefits of electronic nurse documentation, there are personal barriers that impact the use of the computerized systems (Lavin *et al*., 2015; Wells *et al*., 2016). The reviewed studies established that the barriers result from personal behaviours on the perception toward IT as well as the time that nurses spend in documenting patient's information (Swick *et al*., 2012; Anonymous, 2012; Poon *et al*., 2010). The challenge in the use of IT for nurse documentation emerge from old nurses who hold negative perception towards working in an environment with health information technologies (Rack *et al*., 2012; Anonymous, 2013; Berwick *et al*., 2008). The negative perception that long-experienced nurses hold makes it hard for them to adjust electronic nurse documentation such as charting. Some nurses, due to low experience in technology have the fear of wrong-clicking while working with electronic charts for nurse documentation (Hendrich *et al*., 2009; Johnson *et al*., 2012; Anonymous, 2013).

The reviewed studies linked negative attitudes of nurses to their experience, expertise, knowledge and reasoning skills. With low documentation experience, low knowledge and poor diagnostic reasoning skills, it is likely that the documented patient's information is poor (Ricciardi *et al*., 2013; Bos *et al*., 2011). In practice, the level of experience that a nurse has in the technology use and in his/her expertise has significant and positive influence on the accuracy of nursing documentation. Moreover, the attitude of nurses influence the manner in which they prioritize patient's problems for effective documentation (Kleinberg, 2013; DeYoung *et al*., 2009; Hendrich *et al*., 2008). Even though nurses may show positive attitude, age of the nurse significantly contributes to determining the quality of documentation (Rivish and Moneda, 2010; Ricciardi *et al*., 2013; Bos *et al*., 2011).

Effectiveness: The whole idea being assessed on nurse documentations is their effectiveness (Tornvall *et al*., 2004; Croke, 2003) which is equally influenced by a number of factors (Anonymous, 2005a, b). Quality nurse documentation captures clinically significant information (Karkkainen and Eriksson, 2003; Urquhart *et al*., 2009). The significant information include the patient's physical, spiritual, emotional and psychological status (Tornvall *et al*., 2004; Croke, 2003). These elements of patient status are achieved by both human and non-human resources (Paans *et al*., 2011). For instance, quality physical status of the patient can be documented from personal observations as well as recordings from diagnosis devices (Korst *et al*., 2003; Paans *et al*., 2011; Poissant *et al*., 2005). Furthermore, quality nurse documentation should exhibit the healthcare or service given comprising the consultation, counselling, teaching and advocacy (Korst *et al*., 2003; Poissant *et al*., 2005). Unfortunately, some of these services may not be automatically be captured in a health information system. The documentation needs to have plans for evaluating health care/service outcome and discharge (Tornvall *et al*., 2004; Croke, 2003). Overall, these implies that the effectiveness of nurse decisions and health information systems has an impact on the quality of nurse documentation. For instance, failure by health information systems or nurse to document clinically significant information such as patient admission, status of the patient, healthcare or service provided, plans for evaluating outcome, follow-ups, transfer needs and discharge plans amount substandard nurse documentation (Korst *et al*., 2003; Poissant *et al*., 2005).

To have effective use of abbreviations, acronyms and symbols as formats in nurse documentation, the nurse should consider that everyone knows their meaning, including the patient who always has a right to read his/her nursing documents (Anonymous, 2010; CAN, 2008; Voutilainen *et al*., 2004; Mahler *et al*., 2007). Here, obsolete, obscure and poorly defined/described symbols/ abbreviations reduce the quality of documentation as they can easily confuse users and hence errors and waste of time in the nursing process. Also the use of acronyms, abbreviations and symbols in nurse documentation should be in the facility or agency's approved list or reference text (Korst *et al*., 2003; Poissant *et al*., 2005).

Risk of bias across studies: As noted from the risk of bias in individual studies there was no significant risk of bias across studies.

Additional analysis: There was no additional analyses other than the earlier qualitative ones.

Summary of evidence: The systematic review in this study considered online cross-sectional studies,

longitudinal studies and evidence-based studies published by Cochrane Library, CINAHL, ProQuest, Nursing Resource Centre, Campbell, Briggs, Medline and Wiley InterScience. The 97 reviewed studies were published between 2002 and 2016. Among the broad categories of factors that emerged to contribute/ associate to the quality of nurse documentation include effectiveness, accuracy, collaboration, policy, legibility and spelling, technology, complexity, environment and attitude of the nurse charged with documenting patient information.

The aspect of effectiveness is determined by the level to which the nurse captures the patient's emotional, physical, psychological and spiritual status. Effectiveness further links to the overall use and understanding of acronyms, abbreviations and symbols in nurse documentation. Accuracy enhances the quality of nurse documentation. Accuracy requires that a nurse record patient information as soon as an event occurs or a service is provided. However, policy restrictions on patient's privacy cause errors, vagueness and lack of clarity thus negatively impacting on the quality of nurse documentation. Thus, the quality of nurse documentation is judged by the choice of words and the level of objectivity reflected in their contents. Accuracy as an element of nurse documentation is influenced by guided clinical reasoning, structured documentation forms, nursing background knowledge, classification systems and the use of computer-based patient documentation. Closely linked to accuracy was timing factor. To enhance the quality of nurse documentation, through time efficiencies there is need to employ standardized forms though some systems may require more documentation. In the use of standardized computer-based forms, documentation should be complete, clear and concise.

The code of ethics also, requires nurses to respect patient's informed choice on their preferred treatment and lifestyle. Hence, this may turn out to be risky to the patient's overall health and hence, portraying the nurse documentation as 'Poor and substandard'. Collaboration as a core aspect in ensuring quality nurse documentation, may occur among the nurses, between nurses and patients, between nurses and the patient's family/caregiver and between nurses and other healthcare professionals. However, errors can still arise from client outcomes due to poor communications. Without strong and clear facility or agency policy, the quality of nurse documentation can be affected in the rise of mistakes/errors that need change/adjustment. While facility or agency policies on nurse documentation is followed to obtain a practical and reasonable documentation standard, the depth and frequency of documentation varies based on the patient's level of illness and risk that he/she is exposed to. The amount and frequency of nurse documentation is controlled by factors such as facility or agency policies or procedures, complexity of patient's health problems, patient's risk exposure and the level of risk involved in the patient care.

Technological factor impact on the speed and ease of creating, storing, accessing and retrieving necessary patient information for efficient documentation processing. Technology use has been witnessed in the adoption of various health information technology towards enhancing the quality of nurse documentation. The use of technology in nurse documentation has solved the conventional problem surrounding the legibility and clarity as measures of nurse documentation. The legibility in nurse documentation helps to eliminate errors in subsequent steps in the nursing process. Timing is a significant factor in achieving accurate nurse documentation which is an element influencing the quality of documentation. Accurate timing, through the use of technology, implies accurate nurse documentation. However, standardized documentation checklists and guidelines which comes with HIT presents a challenge as it does not allow for sensible thought from nurses.

This study noted that the complexity of a patient condition has an impact on the accuracy of nurse documentation. The three broad categories of factors that contribute to the complexity of patient's situation included cultural differences, severe diagnosis that occur in specialty areas and the manner in which a patient expresses severe diagnoses. The patient's complexity and accuracy are heightened or lessened by the attributes of workplace environment which this study categorized into six broad areas: the number of patients assigned to a single nurse, the workload and time needed for patient's diagnosis, the use of medical model, the amount of administrative roles, the physical reaction to diagnoses and the structure of information to be used. The study established that effectiveness, accuracy, ethics, collaboration, policy, legibility and spelling, technology, complexity and environment are all affected by the attitude, experience and knowledge of nurses. With low documentation experience, low knowledge and poor diagnostic reasoning skills, nurses may hold negative attitude, thereby leading to poor nurse documentation.

CONCLUSION

The study achieved its aim and effectively answered the research questions. In light of the evident factors, instilling good quality of nursing documentation in proper management of patient with chronic disease, either in hospital and institutions, requires nurses to ensure that

their records are accurate and effective through the use of healthcare technologies. Using technology further ensures that the nurses efficiently collaborate to generate legible and less complex documentation for quality matters. The healthcare organizations/institutions should also develop a positive work environment and positive attitudes among the nurses, between the nurses and management and between patients and nurses to facilitate quality nurse documentation. Apart from encouraging the use of strong and clear facility or agency policy, nurses need to have in-depth documentation experience, knowledge and strong diagnostic and reasoning skills.

RECOMMENDATIONS

Future researchers interested in conducting a similar study should use publications from non-English speaking nations. The future research should employ quantitative approach and design on a repeat of this study. Also, an adequate funding is needed for future researchers interested in repeating this study as the process incurs a lot of cost. Nonetheless, achieving high quality of nurse documentation requires a combined effort among the healthcare personnel who should ensure that there is proper infrastructure and supportive work environment for quality nurse documentation. The healthcare organizations/hospitals should, therefore, be sensitive to both internal and external environment affecting nurses in charge of patients with chronic diseases.

LIMITATIONS

The researcher had cost challenges while accessing studies directly from electronic databse. Thus, the study relied on majority of online publications from Cochrane Library, CINAHL, ProQuest, Nursing Resource Centre, Campbell, Briggs, Medline and Wiley InterScience. The study entailed only studies published in English which limits its use in the non-English speaking nations. The study employed a qualitative approach and design which might contribute to researcher biases associated with personal judgement on result.

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