Research Question and Literature Review

[Author Name(s), First M. Last, Omit Titles and Degrees]

[Institutional Affiliation(s)]

**Problem**

Double-checking is a typical method intended to improve patient safety and security. It is almost perceived in all areas and units inside the healthcare facilities. It is significant to double-check the medication before administering it to the patients predominantly in the emergency departments (Chua, Lee, Peralta, & Lim, 2019). Incapacitating the barriers need administrations to review medicine procedure strategies and involve nurses more in medicine security research and in planning medical guidelines for their practice (dos Santos, Ulbrich, Woloszyn, & Vieira, 2018). However, the significance of the double-check policies and any errors exposed during the double-check procedure must also be castoff for learning, education, awareness and organization development would be addressed in the research.

**Review of Literature**

Double examination of medicine administration in hospices is normally standard exercise, predominantly for high-risk medications. However, its efficacy in decreasing medication administration errors (MAEs) and enhancing patient consequences rests unclear (Koyama et al., 2019). A systematic review using five databases PubMed, CINAHIL, Ovid@Journals, was conducted to evaluate the evidence of the efficacy of double-checking to decrease MAEs (Koyama, Maddox, Li, Bucknall, & Westbrook, 2019). The research has evaluated the problems associated with the risk difference represented by the connection of double-checking and MAEs, the association of double-checking and patient harm and a percentage adherence to the hospital's twofold checking procedure (Koyama et al., 2019). Thirteen studies were observed, including ten observational studies, one randomized control trial and last was a randomized trial (Koyama et al., 2019). Out of these studies it has been observed that one of three represented a significantly positive association of double-checking of administration of medicines with a reduced number of medication administration errors (Koyama et al., 2019). The study has shown an insignificant effect of double-checking in the reduction of medically administered errors overall (Koyama et al., 2019). Higher-quality reviews are required to conclude if, and in what setting, double-checking yields adequate remunerations in patient well-being to permit the substantial resources required.

Another study delivered suggestion that single checking arrangement is a feasible way to plummeting medication mistakes and also deliberate the additional benefit of staff gratification. Pledging quality and security contains the necessity to encounter the *status quo* grounded on exposed evidence (Chua, Lee, Peralta, & Lim, 2019). This study was conducted by Chua and the colleagues in 2019 to present an organized assessment procedure that delivers indication that the single-checking (SC) organization is not only a practical decision in decreasing medication mistakes but likewise has the additional improvement in the management. The study was performed via a survey and study survey comprised of 12 questions with a 5-point Likert rule. It has resulted in the number of medication errors essentially reduced (*P* < 0.001; a two-sample test of proportions). The nurses and the staff responded positively when introduced with changes regarding double checking process in the hospitals (Chua et al., 2019). The single checking procedures resulted in better delivery of quality care to the patients, staff self-satisfaction, and minimum time for waiting for patients and utilization of the available resources effectively (Chua et al., 2019). The study has suggested that single checking is a practical decision, and discerning double-checking may be merely for those RNs who are unacquainted with the procedure or medicines (Chua et al., 2019). The double examination must only be functional deliberately to circumstances that utmost warrant their consumption.

To evaluate the exercise of diverse double-checking measures in chemotherapy administration and to discover nurses' understandings, for instance, how frequently they essentially discover errors by a certain process. There are a lot of studies that have suggested a negative influence of double-checking before administering medication; however, few studies have shown a significant decline in the administration of medication errors. This cross-sectional survey was conducted by the researchers for universal assessments concerning double-checking, the incidence of disruptions through and produced by check, or what is observed as its vital feature was evaluated. It was essential to observe the oncology unit double-checking procedures to observe the types of procedures applied in it. It was a cross-sectional study in which 274 nurses were the participants (Schwappach, Pfeiffer, & Taxis, 2016). The research was conducted utilizing the survey method and read back was most frequently rated to avoid medication mistakes. The survey evaluated that the nurses practising the double-checking procedures found it 78% appropriate process to effectively reduce the administration medication errors. Double-checking process was interrupted and it was the most frequently observed answer. It has been concluded that the double-checking was the most observed characteristics of oncology nurses and jointly observed was also most often observed among these nurses (Schwappach et al., 2016). The most subsequently observed answer that the double-checking was interjected is a measure of concern that entails further research to be appraised.

Checking medicines before their administration by nurses is a fundamental anticipatory action for medication mistakes (Athanasakis, 2019). The research was conducted by Athanasakis and the colleagues to get evidence of the reviews concerning the method of checking medications before administration in the year 2019 (Athanasakis, 2019). In everyday clinical practice, because nurses accomplish medication checking in the routine medical practice. They practice it on their own (Single) or through another nurse (double) and are accountable for whatever they direct to the patients; the examination is openly connected to nursing. A literature examination was commenced from PubMed, Science-Direct, and British nursing index and Cinahil databases by particular keywords for appropriate articles available in English from January 1990 to March 2015. Twenty main study reviews and three assessments were incorporated for this study. The reviews taken were in support of the argument that states single checking, and double-checking before administering medication errors can significantly reduce the number of errors in hospitals. Single checking is being adapted in a few hospitals and has observed a decrease in medication errors. Various studies have also suggested that double-check can significantly decline the rate of administration of medication errors. It is very crucial for the nurses to single check and has double-checked, particularly when administering medication to the patients of critical care units and highly critical care units. However, the scarcity and ambiguous status of the data available has limited the review to generalize the results universally. This review has identified a research gap between limited data and research which has strongly recommended that there is a need for further research to evaluate the exact areas where and how these checking procedures are helpful.

There was a disparity among pediatric nurses' observance to double-checking stages through medication management. The greatest recurrent kind of administration mistakes or aberration commencing policy intricate the drug being delivered to the mothers to direct to the youngster while the healthcare provider was not present (Alsulami, Choonara, & Conroy, 2014). The greatest number of errors were reported in the surveys which was related to the medication administration by parents. It was prospective observational research in which the drug doses, administration of drugs, double-checking policies and drug administration in the pediatric unit (Rosenfeld et al., 2018). The pediatric nurses usually observe single checking and double-checking in case of critical care practice during their services delivered to the children; however, the parents often fail to administer medicine as per prescribed dose (Alsulami et al., 2014). There were 64 medicines left for the parents to administer to their children and at that time, nurses were not present (Alsulami et al., 2014). Drug prescription calculation was merely twofold verified autonomously in 591 (30%) medication administrations (Alsulami et al., 2014). The study was conducted by the Alsulami and the colleagues in the year 2014, and the purpose of the research was to decline the rate of medication administration errors.

Oncology department has been observed with clear and specific strategies to maintain double-checking before administering medicines to the patients (Rosenfeld et al., 2018). Nurses have been observed to follow the rules and policies while administering medication according to the hospital facility. Nurses observed with satisfying behaviour and efficiency was improved while administering medicine with a double-check. This study was conducted in the oncology department in the year 2018. The research has shown an enhanced self-medication administration in the department of oncology. Double-checking medicines is an extensively castoff policy to improve safe medication management in oncology; however, there is diminutive evidence to favour its efficacy. The increased usage of double-checking may be clarified by optimistic approaches to checking between nurses (Leahy et al., 2018). This was a survey conducted in three Swiss hospitals with a survey questionnaire (Fu et al., 2018). The survey included 41 objects with 6 areas (Schwappach, Taxis, & Pfeiffer, 2018). Every question was documented with 7 points Likert rule. The results were depicted via regression analysis that has positively responded with 86% rate (Schwappach et al., 2018). They have suggested that the reduction is possible in administering medication if there is a double check policy (Schwappach et al., 2018). However, 33% have suggested that there were errors and interruptions while double-checking before administering medicines (Schwappach et al., 2018). Double-check policy is directly linked with staff satisfaction; the safety of the patient and disadvantages have been reduced to a greater extent as compared to a single check.

**How well the existing literature addressed the problem? Barriers and Challenges**

 The available researches and the studies have substantial information that has focused the scientists recognizing the problem and the barriers to overcome the issue. With workload problems impending deeply over physicians, autonomous twofold checks should merely be castoff for very discerning high-risk tasks or high-alert medicines (not all) that most permit their use (Heneka, Shaw, Rowett, Lapkin, & Phillips, 2018). Double-check is a process that consumes time, and in a healthcare facility, there is a workload that consumes a lot of time of the healthcare provider (Litman, 2018). Deficiency of time to transmit out the examination procedure correctly was a robust, recurrent subject in studies of unsuccessful double checks and workforce confrontation to this policy (Foged, Nørholm, Andersen, & Petersen, 2018). It has been observed in various studies that staff is reluctant to adopt the new and additional duties assigned to them. It includes the double-check of medication before administration to the patients. Nurses have shown a positive attitude towards the double-check, however, have suggested that it took 20 minutes to double-check medication before administering and lack of information technology usage is also influencing the delays and wrong administration of medication (Hu, Chiu, & Wu, 2018). Studies have suggested that it is more profound in outcomes to double-check medication, but the time-consuming activities are usually not practical in healthcare facilities.

Four major areas have been identified in the medication practices such as understanding of the medication errors including how and what kind of errors usually happen in the healthcare facilities (Alomari, Wilson, Solman, Bajorek, & Tinsley, 2018). The second important factor identified was the busy schedule of the staff and healthcare providers (Alomari, Wilson, Solman, Bajorek, & Tinsley, 2018). This includes the duty routine, self-administration, single check, double-check and time consumption in administering and delivering the services (Rishoej, Almarsdóttir, Thybo Christesen, Hallas, & Juel Kjeldsen, 2018). The third profound factor that also hindered the way of double-check policy is the physical environment such as the environment of the healthcare facility, healthcare rooms, poor atmosphere, non-cooperation from the staff, and the patient-centred areas including the interruptions from parents and patient relations (Alomari et al., 2018). Fourth important factor identified was the compliance with the policy related to the medications and practices (Schutijser et al., 2018). Family involvement in understanding medication drug usage and its adverse effects are also associated with the wrong administration of medicines (El-Saifi, Moyle, & Jones, 2019). It involves the complete details of the administration of the medications, the guidelines related to the medicines, preparation training and the administering rules of the healthcare facilities (Chua et al., 2019).

Unfavourable conditions of the healthcare facilities and the time-consuming policies have a significant influence on double-checking policies of administering medication to the patients (Keers et al., 2018). Assignments and load, recurrent disruptions to the procedure, underprivileged physical setting scheme particularly in radiation departments, absence of preparation space, and unfeasible medicine rules are recognized as barriers to nontoxic medication practice (Christensen, Nause‐Osthoff, Waldman, Spratt, & Hearn, 2019).

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