Understanding Research Articles/ Cleveland Clinic WOC Nursing Education

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Points criteria:

Criteria	Under performance <3 points per criteria	Basic 3 – 3.9 points per criteria	Proficient 4.0 – 4.4 points per criteria	Distinguished 4.5 – 5 points per criteria
Required content objectives	Content objectives are missing or sparsely covered.	Content objectives are not consistently addressed. Demonstrates minimal understanding of content.	Content objectives consistently addressed. Demonstrates understanding of content.	Content objectives consistently addressed. Demonstrates mastery of content.
Academic writing standards	Writing lacks scholarly tone & focus. Sparse content. Multiple grammatical, spelling, & factual errors. Reliance on bullet points rather than effective writing in speaker notes. 4 or more direct quotes per project.	Writing is unclear and/or disorganized. Inconsistent scholarly tone. Inadequate depth of content. Grammatical and spelling errors. No more than 3 direct quote of less than 40 words per project.	Writing demonstrates general exploration of content. Responses are clearly written using scholarly tone. Few grammatical and/or spelling errors. No more than 2 direct quote of less than 40 words per project.	Writing demonstrates comprehensive exploration of content. Responses are clearly written using scholarly tone. Rare grammatical and/or spelling errors. No more than 1 direct quote of less than 40 words per project.
APA formatting	References and citations have multiple errors or are missing.	References and citations have errors.	References and citations have few errors.	References and citations have rare errors.

Carefully review the above rubric and the directions for each of the following pages. Select from **one** of the two articles provided in the course discussions area. Based on the type of research selected, respond to the questions on the following pages.

References: *See the course syllabus for specific requirements on references for all assignments.*

Part A: Select just one (not both) of the articles from the week two DQ assignment thread. Determine whether the article is qualitative or quantitative research, then, using an academic voice & APA formatted citations/references, formulate a 150-300 word response to each of the following sections and enter your responses into the text-boxes below.

1. Using APA format, enter the reference for the article you reviewed. Explain the rationale for selecting this research article and how it relates to your own practice.

I selected this article because of its relevance to pressure injury device-related prevention, despite my lack of experience in pediatric settings. I have encountered a comparable incident involving the use of a nasal cannula within our unit. A 92-year-old male patient in the Intensive Care Unit (ICU) underwent a consultation to assess and manage a "wound" on the right side of his face. Upon our arrival in the room, there was a suspicion that the presence of a pressure injury device was involved. The patient exhibited a nasal-to-ear connection line mark at stage 1. Following a comprehensive assessment and analysis, our final evaluation determined that the issue was related to the nasal cannula. After that particular encounter, I subsequently encountered several cases of injuries associated with devices. However, the aforementioned incident stands out as my initial recollection of a pressure injury directly linked to device usage. The reference for the article Nasal Pressure Injuries Due to Nasal Continuous Positive Airway Pressure Treatment in Newborns A prospective observational study that I reviewed:

Dai, T., Lv, L., Liu, X., Chen, J., Ye, Y., & Xu, L. (2020, January). Nasal Pressure Injuries Due to Nasal Continuous Positive Airway Pressure Treatment in Newborns. Journal of Wound, Ostomy, & Continence Nursing, 47(1), 26–31. https://doi.org/10.1097/won.0000000000000604

2. Describe how you determined whether the selected research article is qualitative or quantitative.

The selected article uses a quantitative research methodology. The text demonstrates that by stating "a prospective observational study", which is a specific sort of observational study that involves the systematic tracking of a cohort of individuals over a defined period. During this period, data is collected regarding their exposure to a particular variable of interest, and finally, the researcher mathematically reads the outcomes. Moreover, it becomes evident that the nature of this study is quantitative research upon understanding that quantitative research involves the systematic collection and analysis of numerical data (Dai et al., 2020).

According to the study conducted by Williams et al. (2022), quantitative research primarily focuses on the analysis and interpretation of numerical data, emphasizing the use of measurement and quantification. It can be defined as the process of investigation in which the collected data are expressed mathematically. The utilization of statistical analysis encompasses the identification of patterns and averages, the formulation of forecasts, the examination of causal links, and the extrapolation of findings to broader populations. Quantitative research is characterized by its contrast with qualitative research since it primarily focuses on the collection and analysis of numerical data. Conversely, in qualitative research, all collected data would undergo word coding. In order to maintain relevance, it is imperative that all research conducted possess a high degree of credibility. Quantitative research has the facade of being intrinsically trustworthy. The preference for

quantitative research stems from its methodical and explicit nature, as well as the perception that establishing links between numerical data is inherently more rigorous than interpreting meaning from verbal and behavioral cues.

Part B: Based on the selected research, formulate a response to each of the following8 questions associated with the selected research type (qualitative or quantitative). Enter your thoughtful responses to the textboxes below. Each response should be 150 – 300 words and cited using APA style from your reference list.

1. Why is IRB/informed consent an important part of research? Determine if Institutional Review Board (IRB) approval/informed consent obtained. If the research was done outside of the United States, the review body may go under a different name.

In accordance with federal regulations and institutional policy, the IRB Full Board is mandatory for research applications that entail a level of risk to human subjects that exceeds minimal. Regardless of the level of risk involved, the Institutional Review Board for Health Sciences and Behavioral Sciences (IRB-HSBS) may mandate a comprehensive evaluation by the full board in cases where the research encompasses: Vulnerable populations, specifically individuals who are incarcerated; Controversial subjects, such as unlawful activities that would necessitate the acquisition of an NIH Certificate of Confidentiality (CoC) (addressed in order to safeguard participant data

from being disclosed under legal obligation); Research pertaining to genetic and genomic analyses is of a sophisticated nature, necessitating the involvement and knowledge of numerous board members for the purpose of evaluation (IRB Review Process | Research Ethics & Compliance, n.d.).

The research from Dai et al. (2020) clearly states that the study procedures underwent a thorough evaluation and received clearance from the Ethics Committee of the First Affiliated Hospital of Xiamen University. The approval number assigned to this study is KYX-2017-010. Consent for study participation was obtained from the parents or legal guardians of each patient.

2. Describe (based on selected research type)
a. **Qualitative article:** the purpose statement **– or –**
b. **Quantitative article:** the problem and purpose of the research

The problem with the article Nasal pressure injuries Due to nasal continuous positive airway pressure treatment in newborns A prospective observational study found that newborns who receive NCPAP treatment are highly susceptible to a medical-related nasal pressure injury. According to Dai et al. (2020), nasal continuous positive airway pressure (NCPAP) is a widely employed medical intervention utilized for the treatment of respiratory distress. To ensure the maintenance of a consistent airway pressure, the utilization of closely fitting bi-nasal prongs or masks is employed. However, the application of forces to the nasal region through the utilization of nasal prongs or nasal masks can potentially result in the occurrence of a pressure injury. The young and delicate dermis of the neonate's nasal region increases the susceptibility to the formation of pressure ulcers, even when nasal prongs are utilized for a brief duration. Therefore, the neonate who undergoes nasal continuous positive

airway pressure (NCPAP) therapy has an increased likelihood of developing a nasal pressure injury of medical origin. For this reason, the purpose of the study was to calculate the incidence, severity, and risk factors of nasal pressure injuries due to nasal continuous positive airway pressure (NCPAP) treatment in newborns.

3. Describe (based on selected research type)
a. **Qualitative article:** research design **– or –**
b. **Quantitative article:** the research questions

A research question refers to an inquiry that a study or research activity endeavors to address. This inquiry frequently pertains to a matter or a dilemma that is resolved at the study's end by use of data analysis and interpretation. Researchers have developed effective ways to convey the message of how to build a good research question that can be easily recalled under the acronyms of PICOT (population, intervention, comparator, outcome, and time frame) and FINER (feasible, interesting, novel, ethical, and relevant) (Caduff et al., 2023).

In line with these concepts, the data from Dai et al.'s (2020) research indicate a high prevalence of medical device-related pressure injuries in infants. In order to create this piece, the researchers formulated some inquiries about the frequency, intensity, and potential risk factors related to the use of nasal continuous positive airway pressure (NCPAP) in a neonatal intensive care unit (NICU). All of the aforementioned questions and queries considered demographic data, which included variables such as gestational age, birth weight, number of days of NCPAP therapy, and overall duration of stay in the Neonatal Intensive Care Unit (NICU). A comprehensive examination was carried out on nasal pressure injuries arising from the utilization of nasal prongs during the administration of nasal continuous

positive airway pressure (NCPAP) treatment to determine and provide a response to these inquiries.

4. Explain in your own words a summary of the literature review used in the selected article.

Medical device-related pressure injuries occur when devices designed for diagnostic and therapeutic purposes, such as nasal continuous positive airway pressure (NCPAP), are used to manage newborn respiratory distress. Nasal pressure injuries can cause pain, infection, or damage to structural nasal tissue, requiring plastic surgery. The incidence of NCPAP-related nasal pressure injuries ranges from 20% to 100%, but this wide range likely reflects the absence of a standard definition and classification of nasal pressure injuries. Fischer and colleagues adopted a classification system based on the standardized classification of pressure injury categories from the National Pressure Ulcer Advisory Panel. Data reported by the NPUAP suggest that the incidence may be more than 30 cases per 1000 days of NCPAP in adult patients, with the vast majority representing superficial trauma. Robertson and colleagues reported seven cases of nasal injuries in a sample of 35 very low-birth-weight newborns over a period of 6 months, reflecting an occurrence rate of 20% in newborns managed by NCPAP. Fujii and colleagues reported that 86% of nasal pressure injuries were associated with continuous positive airway pressure (CPAP) or demand positive airway pressure (DPAP), suggesting that nasal CPAP pressure injuries are attributable to compression of the nasal skin against the cannula. Do Nascimento and colleagues reported a 100% nasal injury rate among 147 preterm newborns managed by a single type of nasal prong, classified as mild with redness or nasal hyperemia, moderate bleeding injuries, and severe injuries with necrosis. These findings suggest that medical device-related pressure injuries are prevalent in newborns, and they are similar to a

study conducted by Xie, who reported a mean interval between the initiation of NCPAP and the onset of injury of 3.2 days; they are also similar to Fischer and colleagues, who reported a mean interval of 2.7 days. Dai finally concurs with Newnam and colleagues, who recommend additional research in order to identify even more effective interventions for the prevention of pressure injuries in neonates managed by NCPAP.

5. Identify (based on selected research type)
a. **Qualitative:** the data collection method(s) **– or –**
b. **Quantitative:** the study design, including sample, setting, & data collection methods.

DESIGN: A prospective observational study

SUBJECTS (INCLUDING SAMPLE): Newborns admitted between March 2017 and February 2018. Data were collected from medical records of 900 newborns admitted to NICU. Four hundred sixty-one of these patients (51.2%) were treated with NCPAP; 32 (6.9%) were excluded due to receiving the treatment less than 24 hours, resulting in a final sample size of 429 comprising 5536.7 patient observation days of NCPAP treatments.

SETTING: Neonatal intensive care unit of the First Affiliated Hospital of Xiamen University, Xiamen, China.

METHODS: The nasal passages of all babies were assessed during the administration of nasal continuous positive airway pressure (NCPAP). All instances of nasal pressure injuries associated to NCPAP were documented, including the date of incidence, severity of the injury, outcomes, and procedures used for treating the pressure injury. The data were gathered on a biweekly basis by a study nurse. The categorization of nasal pressure

injuries was conducted utilizing the pressure injury classification method developed by the National Pressure Ulcer Advisory Panel and the European Pressure Ulcer Advisory Panel.

6. Analyze (based on selected research type)

a. **Qualitative:** the results of the research study **– or –**

b. **Quantitative:** the data collection tool used; is the tool validated?

Validity pertains to the degree to which a given methodology accurately assesses the target construct. When research exhibits high validity, it signifies that its outcomes align with genuine attributes, traits, and fluctuations within the physical or social realm(Elangovan & Sundaravel, 2021). In the article in analysis, the validity of the obtained results is contingent upon the establishment of a robust study design, the selection of suitable methodologies and samples, and the meticulous and consistent execution of the research process used.

> “Demographic and pertinent clinical data were extracted from the electronic medical record anonymously by computer engineers using medical record numbers. These engineers were responsible for the operation and maintenance of electronic medical records. Data were recorded for all NCPAP-related nasal pressure injuries on the investigator-developed form and included occurrence date, injury severity (stage), treatment methods, and injury outcomes. Data were collected twice a week by 1 research nurse. The incidence of pressure injury was calculated using 2 formulas including the cumulative incidence (CI, %) = number of newborns with pressure injuries/ total number of newborns in sample × 100 and the incidence density (ID, person per 1000 days) = number of newborns with

pressure injury/number of days newborn were followed × 1000 (Dai et al. (2020)".

7. Summarize (based on selected research type)

a. **Qualitative:** conclusions and implications for further research **– or –**

b. **Quantitative:** study results, including strengths & limitations.

According to study results, 900 babies who were admitted to the NICU between March 20, 2017, and February 28, 2018, and whose medical records were reviewed, Per the data provided, a total of 429 patients (529.7%) who received 5536.7 patient observation days of NCPAP treatments were included in the analysis. Of these patients, 461 (51.2%) had NCPAP therapy, and 32 (6.9%) were eliminated from the study because they had undergone the procedure for fewer than 24 hours. Of the babies treated with NCPAP, 139 (34.7%) experienced nasal pressure injuries. 99 babies (66.44%) developed nasal pressure injuries classified as Stage 1, 48 (32.21%) as Stage 2, and 2 (1.25%) as deep tissue injuries. According to this, there are 27 incidences of nasal pressure damage overall per 1000 days of NCPAP use, of which 18 cases were Stage 1 injuries, 8.6 cases were Stage 2 injuries, and 0.4 cases were deep tissue injuries. The two individuals who experienced deep tissue damage were categorized under Stage 2 for statistical purposes. 10 babies (38.5%) with a gestational age under 28 weeks experienced nasal pressure injuries; 72 newborns (52.5%) with a gestational age between 28 and 31 weeks; 60 instances (27.3%) with a gestational age between 32 and 36 weeks; and 7 cases (15.2%) of full-term newborns (37 weeks) also experienced them. When examining the prevalence of nasal injuries in various birth weight groupings, a similar pattern was discovered. NCPAP treatment durations of more than 6 days were significantly greater in newborns with a gestational age of less than 32 weeks. Birth weight and the number of days spent in the NICU were not linked to a higher risk of suffering

a nasal pressure injury when receiving NCPAP therapy. The mean time between the start of nasal pressure damage and the introduction of NCPAP was 4.72 days. Stage 2 pressure injuries occurred after a mean of 3.88 days of NCPAP therapy, while Stage 1 pressure injuries manifested after a mean of 5.08 days. Nineteen occurrences of stage 1 nasal pressure injuries were followed by stage 2 injuries, whereas eighty stage 1 cases did not move to stage 2. Stage 1 and Stage 2 nasal pressure injuries both had recovery times of 6.38 days. Research like this is being conducted to help prevent and cure neonatal pressure injuries caused by devices. This way, the strength of this work is to take precautions to protect the nasal skin as part of our NICU's NCPAP standard of care by carefully choosing correctly sized prongs and masks, rotating nasal prongs to nasal masks, using prophylactic dressings, and routinely assessing the external and internal nares. These precautions were taken both before and throughout the trial, but they weren't able to prevent all nasal pressure injuries, making it clear that more study is needed to find even more effective pressure injury prevention strategies for neonates using NCPAP. Some limitations were found because only one NICU environment was employed in the study and only one brand of NCPAP prongs and mask was used. It is not possible to generalize the results to other NICU populations utilizing other types of devices. The research's sample did not contain any neonates with extremely low birth weights (500 g or less), so its conclusions cannot be applied to this population. Regular assessment and documentation of nasal pressure injuries by a research nurse may have drawn NICU nurses' attention to better preventative strategies and reduced the frequency of pressure injuries (Dai et al., 2020).

8. Discuss why is this research important to the body of WOC nursing knowledge

Emerging studies, such as the one mentioned in this project, are being conducted to provide guidance on the prevention and treatment of pressure injuries associated with medical devices in neonates. In accordance with the Neonatal Intensive Care Unit's (NICU) standard of care for nasal continuous positive airway pressure (NCPAP), several procedures are implemented to safeguard the nasal skin in most hospitals. These efforts include meticulous selection of prongs and masks that are of suitable size, periodic rotation of nasal prongs to nasal masks, utilization of prophylactic dressings, and routine evaluation of both the exterior and internal nares. Although these procedures were implemented in the years leading up to and during the research, their efficacy in avoiding all nasal pressure injuries was shown to be inadequate. This conclusion demonstrates the necessity of studies and analysis to improve the prevention of pressure injuries in neonatal settings (Dai et al., 2020). Still on the subject of medical-device-related pressure injuries, they are often observed in adult populations as well, particularly among the elderly, owing to factors such as capillary fragility and other physiological alterations. Additional characteristics that were noticed were the duration of hospitalization, patients with serious illnesses, and those in need of medical devices, plus the variety of medical equipment that has been linked to the occurrence of skin lesions. Notably, these include not only devices used for breathing but also those used for feeding and orthopedic purposes, as well as tubes, oximeters, neck collars, patches, and nasogastric tubes (Cavalcanti & Kamada, 2020).

More over, despite advancements in technology and enhanced preventive measures, there continues to be a rise in the incidence of cases, and there are several risk variables associated with the occurrence of pressure injuries connected to medical devices. These risk factors encompass the patient's severity, duration of hospitalization, humidity levels, skin friction, and age, as well as the utilization of vasoactive medicines and sedatives, among other things. Furthermore, the utilization of risk prediction scales, such as Braden's scale, has proven to be efficacious, even when they

are not exclusively designed for medical device-associated pressure injuries. Unfortunately, professionals in many fields still possess gaps in their knowledge, necessitating the continuous acquisition of updated information, especially for WOC nurses who enhance their theoretical understanding and effectively apply it in practical contexts with continuous and fast updates of medications and prevention equipment on the market. Practice-based studies have a crucial role in not only the interventions integrated into the treatment but also the efforts directed towards preventing new cases of pressure injury (Dang et al., 2021).

9. Use APA format to list your references for this assignment**:**

Cloutier C., Ravasi D. (2021). Using tables to enhance trustworthiness in qualitative research. *Strategic Organization*, 19(1), 113–133. https://doi.org/10.1177/1476127020979329

Caduff, C., Bhangu, S., & Provost, F. (2023). Introduction to qualitative research methods – Part I. Perspectives in Clinical Research, 14(1), 39. https://doi.org/10.4103/picr.picr_253_22

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Elangovan, N., & Sundaravel, E. (2021, April 8). Method of preparing a document for survey instrument validation by experts. PubMed Central (PMC). https://doi.org/10.1016/j.mex.2021.101326

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Williams, M., Wiggins, R. D., & Vogt, W. P. (2022, March 21). Beginning Quantitative Research.

References of the summary of the literature review used in the selected article

Smith LP, Roy S. Treatment strategy for latrogenic nasal vestibular stenosis In young children. int J Pedatr Otorinolaryngol. 2016,70(8):1369-1373.

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Robertson NJ, McCarthy LS, Hamilton PA, Moss AL. Nasal defor-mitles resulting from flow driver continuous positive airway pressure. Arch Dis Child Fetal Neonata/ Ed. 1996;75(3)F209-F212.

Fuji K. Sugama J, Okuwa M, Sanada H, Mizokaml Y. Incidence and risk factors of pressure ulcers in seven neonatal intensive care units in Japan: a multisite prospective cohort study Int Wound J. 2010;7(5):323-328.

do Nascimento RM, Ferreira AL, Coutinho AC, Santos Verissimo RO. The frequency of nasal injury in newborns due to the use of continuous positive airway pressure with prongs. Rev Lat Am Enfermagem. 2009:17(4):489-494,