Leona Onuoha

The target population for the study is patients who are 18 years and older hospitalized with an indwelling catheter. In the United States, about 60% of the patients in an intensive care unit and 20% outside the ICU have an indwelling catheter (Shadle, Sabol, Smith, Stafford, Thompson & Bowers, 2021). Urinary tract infections (UTIs) are among the most common hospital-acquired infections, and 70% are catheter-associated. Therefore, the sample population includes the hospitalized patients aged 18 years and above with an indwelling catheter in a public acute care hospital. The sample size will consist of the eligible patients visiting the selected hospital within the study period.

**Sampling Approach**

A convenience sampling method would be utilized in this study to recruit participants in the study. The participants in the survey would be enrolled according to availability and accessibility. The available and accessible population for the study includes the hospitalized patients with an indwelling catheter. Therefore, all the patients attending the hospital and meeting the eligibility criteria would be included in the study. Although a convenience sampling technique is a non-probability sampling method, it is commonly used in randomized clinical trials because the researcher selects the subjects based on availability and accessibility. The essential advantage of a convenience sampling method is that it is quick, inexpensive, and convenient (Elfil & Negida, 2017). The target population is significant because it would be complex to collect data from all the patients with an indwelling catheter in the entire country. Hence, a convenience sampling technique allows the researcher to obtain the sample population conveniently. It saves time and cost because the researcher would receive data from easily accessible participants and within the exact location. However, convenience sampling has various disadvantages. One of the disadvantages is the limitation in generalizability of the results to the entire population (Martínez-Mesa, González-Chica, Duquia, Bonamigo & Bastos, 2016). Multiple variables make it difficult to generalize the study findings. The setting and protocols in a single hospital may not be similar to another. The other disadvantage is that convenience sampling has a possibility of under-or over-representation of the entire population. All the patients with an indwelling catheter may not be willing to participate in the study (Martínez-Mesa, González-Chica, Duquia, Bonamigo & Bastos, 2016). The sample size or the number of patients used as a sample is likely to under-represent the population as a whole.

**Inclusion and Exclusion Criteria**

The inclusion criteria would involve the requirements for the selection of the hospital and the participants. The inclusion criteria for a hospital is that it should be classified as a referral hospital with at least 400 beds and providing complex clinical care to the patients. The hospital should also have an intensive care unit. The exclusion criteria for hospital selection include undertaking another project that may influence the outcomes to be measured in this study (Piantadosi, 2017). Another exclusion aspect is if the hospital is closing, relocating, or a new one opening.

The inclusion criteria for participants include patients hospitalized in the selected hospital with an indwelling catheter and without any pre-existing UTIs during catheter insertion. On admission, the patient would be tested for any UTIs to avoid including a patient who acquired the UTIs before admission into the hospital. The other inclusion factor is age. The patient included in the study must be 18 years and above. The exclusion criteria include patients inserted with an indwelling catheter with pre-existing UTIs. Any patients with signs and symptoms of UTIs on admission into the hospital would be excluded from the study. The patients would be monitored for any symptoms of catheter-associated urinary tract infections (CAUTIs) using the American National Healthcare Safety Network (NHSN) criteria.

**Determination of Sample Size**

The sample size for the study would include all the eligible patients in the selected hospital. In addition, the eligibility criteria indicate that the hospital should have at least eligibility criteria suggests that the hospital should have at least 400 beds. Hence, the factors that determine the sample size include the number of hospitalized patients that receive an indwelling catheter within the study period of six months.

**Potential threats to internal and external validity**

Internal validity is the degree of confidence that a causal relationship being tested is reliable and not influenced by other variables or factors outside the intervention being tested. This study's various threats to internal validity include history, maturation, testing, attrition, regression towards mean, and instrumentation (La Caze, 2016). The potential threats to internal validity as sources of sampling approach include:

**Testing: It occurs when the pre-test influences the post-test results because the same type of test is administered.**

Subject Attrition: It occurs during the study when the participants drop out due to the experimental treatment instead of coincidence.

Regression towards the mean: The extreme scores of the study tend to be closer to the norm on a second measurement.

Instrumentation: A threat in internal validity occurs when there is a change in how the dependent variable is measured during the study.

External validity refers to how the study findings can be generalized or applied to other situations, groups, and events. The potential threats to the external reality in the study include testing, sampling bias, experimenter effect, and situation effect.

Testing: Occurs when the pre-test participation influences the reaction to the post-test.

Sampling bias: It is one of the greatest threats to this study where the subjects of the study are not substantially representative of the population. The study participants may significantly differ from the target population.

Experimenter effect: It occurs when the behavior of the experimenter unintentionally influences the results of the study. In this study, during the pre-test phase, the clinical staff may improve the catheter insertion and handling because they know an investigation is going on.

Situation effect: It occurs when factors such as the setting, time of the day, researcher's characteristics, location, and other situational factors limit the generalizability of the findings. The situation at a particular time may influence the sampling approach and influence the outcomes of the study.

**Cosmic Question**

**Convenience sampling is a non-probability sampling technique because subjects are selected based on their proximity and accessibility. What strategies can be used to minimize sampling bias in this type of sampling technique?**

**Adama Jalloh**

Define your target population and sample.

The target population refers to the entire group or rather a population, which the research is interested to conduct the study or analysis. The target population from the PICOT will be geriatric patients (70 years and older) who have limited mobility. The population also suffers from different chronic diseases. Immobilization of this population, such as lying in bed for long hours has been associated with the development of pressure ulcers (Jaul et al., 2018). Since the study would be conducted in a nursing care center, a sample size of 25 participants are proposed.

Discuss your sampling approach in terms of their nature, use, advantages, and disadvantages. e.g. you can choose convenience, or quota, or random or purposive, etc

Purposive sampling strategy/technique would be employed. The technique is recommended for use since the sample selected would be based on the characteristic features of the population as well as the objectives of the study (LoBiondo-Wood & Haber, 2017). The choice of the sampling strategy is influenced by the need for gaining insight on a given phenomenon which is under investigation (Crossman, 2020). The subjects who have been selected in the purposive sampling are typical of the study population. The advantages of this approach include saving on time and resources. The technique is also useful when studying population with unique characteristics (LoBiondo-Wood & Haber, 2017). The approach also gives the researcher the freedom to generalize of the sample which is being studies. The disadvantages of the technique include high prevalence of researcher bias. Besides, the technique entails making assumption the overrepresentation and underrepresentation depends on the characteristic nature of the population.

**Indicate the inclusion and exclusion criteria.**

Inclusion criteria are those characteristics which must be met by prospective subjects for them to be included in the study, while on other hand, exclusion criteria disqualify the prospective subjects from inclusion in the study (Patino & Ferreira, 2018). The participants in the study must meet the inclusion criteria. The participants must be 70+ years old, they should be a long-term care nursing facility, they should have limited mobility with comorbidities. The exclusion criteria for the participants include patients in the long-term care facility but are not comorbid, patients who can ambulate, and patient with no present medical history of pressure ulcers.

**Discuss the factors that influenced determination of sample size.**

The sample size determined for this study depends on the design of the study and the method of sampling. The outcome measures also played a role in determination of sample size (Chander, 2017). The outcomes measures came in the context of effect size, significance level, and the study power. For example, a small effect size would demand an increase in the sample size. An increase of the sample size would also lower the significance level between 0.05 and 0.01 (Chander, 2017).

**Discuss potential threats to internal and external validity as sources of sampling bias.**

External validity refers to the extent through which findings of the study can be generalized in situations, people, and settings (LoBiondo-Wood & Haber, 2017). Some of the sources of external validity include sampling bias, experimenter effect, situation effect, and testing effect. Internal validity brings out confidence of cause-and effect relationship which is not brought about by confounding variables. Some of the sources include maturation, history, instrumentation, and testing.

**What is your cosmic Question (This is a question you ask your peers to respond to based on the chapter discussed in class this week i.e. Sampling Strategy).**

**How can a researcher resolve delimitations involved in sampling?**