

HLT-362V Application of Statistics in Healthcare

Student Name

Program Name or Degree Name (e.g., Bachelor of Science in Psychology), University

COURSE XXX: Title of Course

Instructor Name

Month XX, 2024

NURSINGLANCE.COM

Application of Statistics in Healthcare

Interdisciplinary dependence and multisectoral collaboration are vital to healthcare.

Healthcare is a sector that cannot stand alone and borrows highly from statistics, education, and technology to enhance success in healthcare activities. The collaboration increases the quality of healthcare and other fields. Statistics is one of the most applied disciplines. Healthcare professionals utilize statistics in all its vital processes, from prevention and health promotion to research, staff education, curative services, and rehabilitation. Vital activities such as quality improvement, staffing, and resource allocation also utilize statistics. This essay explores the interaction between statistics and healthcare and its use in daily activities.

Application of Statistics in Healthcare

Statistics are vital to quality care delivery. Healthcare leaders utilize statistics to perform their daily activities. These activities include performance appraisal, resource allocation and budgeting, staff scheduling, delegation, and quality improvement. Performance appraisal methods utilize numerical methods to convert staff performance using numerical figures for organizational purposes such as promotion, demotion, salary, and other benefits adjustments (Lin et al., 2019). Resource allocation and budget preparation are vital leadership roles that require extensive use of statistics for their successful completion. Nurse leaders assess organizational needs and prepare to allocate resources depending on the urgency and significance of these activities. Staff scheduling and delegation also require the nurse leader to utilize their knowledge of statistics to balance the schedules and ensure staff are evenly distracted and given tasks that require their knowledge, experience, and training (Fowlers et al., 2021).

Statistics's role in quality improvement projects and care delivery cannot be underestimated. Healthcare professionals use data to determine the presence, severity, and causes

of problems within the healthcare facility. Statistics in quality improvement are useful in pre-implementation research, ongoing assessment, and post-implementation surveys. Healthcare leaders use statistics to ascertain an innovative idea's relevance and environmental conduciveness. They then use statistics to ensure project implementations are according to plan. They collect data and perform surveys, which they analyze using statistical methods to determine their relevance and test hypotheses. Lin and Kellough (2019) note that well-curated statistical methods in performance appraisal are vital for bias-free evaluation, talent recognition, and fair workers' appraisal.

Statistics are useful in evaluating interventions such as healthcare technologies. Kim et al. (2020) note that statistical tests such as chi-square and regression analysis tests are widely used in healthcare to determine the statistical relevance of data in statistics. They help quantify change and thus help do away with retrogressive or ineffective practices, thus maintaining quality care delivery. Most desired patient outcomes in quality improvement initiatives, such as self-reported healthcare experiences, mortality, morbidity, and remission, depend on statistics for their successful evaluation. Thus, statistics are vital for quality care delivery and healthcare evaluation.

Statistics are also vital in patient safety. Healthcare dashboards are some technologies that utilize statistical data to promote patient safety (Simsekler & Qazi, 2022). Healthcare institutions and relevant regulatory bodies assess healthcare data and develop benchmarks against which organizations measure their performance in promoting care quality and patient safety. Dashboard metrics include the number of patients with nosocomial infections, older adults with pressure ulcers, and the percentage of older adults who sustain falls. Healthcare institutions evaluate their data against these benchmarks and initiate quality improvement

initiatives to promote patient safety (Simsekler & Qazi, 2022). Other uses of data in patient safety are in disaster preparedness. Healthcare institutions collaborate with other sectors and statistically evaluate epidemics and natural disasters to determine the resources needed and plan adequately for the events. Thus, statistics and statistical data are vital in promoting patient safety.

Statistics are also helpful in health promotion and preventive health services. Stewart (2018) notes that statistics are vital in identifying disease patterns and determining the diseases with the greatest need for preventive and promotive health services. For example, the US has a high burden of diabetes, obesity, and heart disease mortality and healthcare costs; hence, there is a nationwide need for preventive and promotive health services in these areas (Benjamin et al., 2019). The disease burden varies with regions, and assessing the immediate community using statistical methods helps professionals determine the areas with the greatest need and thus help implement change as needed. Besides, statistical data is vital in evaluating the effectiveness of these preventive and promotive health interventions in achieving the desired outcomes (Kim et al., 2020). For example, numerous studies conducted and analyzed using statistical methods have behavior change with adequate diabetes control (Bean et al., 2021). Thus, statistical data is indispensable and preventive and promotive health services.

Utilizing Statistical Knowledge in Healthcare

Statistical data collection occurs daily, actively, or inactively. Routine documentation of patients' diagnoses, interventions, and outcomes is a passive source of statistical data. Healthcare providers collect the data as they interact with patients routinely. It forms the least expensive and continuous source of data. Healthcare institutions also actively research directed to certain objectives such as disease surveillance or QI improvement. The data source is more accurate,

reliable, and less cumbersome but more expensive. These data sources are interdependent and provide vital statistical data for healthcare activities.

The healthcare facility's statistical data helps in day-to-day tasks such as delegation and task allocation. Other vital purposes are care continuity and billing purposes during discharge and transfers. Care providers assess healthcare data in patient management to inform their decisions on further care. Nurses and other healthcare professionals use statistical knowledge to perform dosage calculations, balance stock, and order supplies (Fowler et al., 2021). They use patient data to determine their needs, such as medications and non-medical supplies to meet their needs. Data is collected for legal purposes and also as evidence of care delivered. Occasionally, the institution conducts specific research, such as the evaluation of staff attitude towards new technology or QI, as mentioned earlier. The institution then uses the data to determine further actions, such as staff training or improvement of the QI based on the research results. Healthcare institutions also use their statistical data to seek support from stakeholders. Fowler et al. (2021) note that statistical data is a powerful tool for convincing stakeholders and leveraging financial support. Thus, statistical data is utilized in day-to-day healthcare activities and is vital in decision-making in all healthcare institution's departments.

Conclusion

Statistics are vital in healthcare, and their roles are undisputably vital. Most nursing activities require good decision-making, such as resource allocation, budgeting, staffing, delegation, medication administration, and research. These uses make them vital for promoting leadership roles, quality care delivery, and patient safety. Nurses must thus have a deep understanding of statistics and their roles in health to participate in data collection, analysis, and utilization in improving care quality and patient safety.

References

- Bean, C., Dineen, T., Locke, S. R., Bouvier, B., & Jung, M. E. (2021). An evaluation of the reach and effectiveness of a diabetes prevention behavior change program situated in a community site. *Canadian Journal of Diabetes*, 45(4), 360-368.
<https://doi.org/10.1016/j.jcjd.2020.10.006>
- Benjamin, E. J., Muntner, P., Alonso, A., Bittencourt, M. S., Callaway, C. W., Carson, A. P., ... & American Heart Association Council on Epidemiology and Prevention Statistics Committee and Stroke Statistics Subcommittee. (2019). Heart disease and stroke statistics—2019 update: a report from the American Heart Association. *Circulation*, 139(10), e56-e528.
<https://doi.org/10.1161/CIR.0000000000000659>
- Fowler, J., Jarvis, P., & Chevannes, M. (2021). *Practical statistics for nursing and health care*. John Wiley & Sons.
- Kim, M., Mallory, C., & Valerio, T. (2020). *Statistics for evidence-based practice in nursing*. (3rd Ed.). Jones & Bartlett Publishers.
- Lin, Y. C., & Kellough, J. E. (2019). Performance appraisal problems in the public sector: Examining supervisors' perceptions. *Public Personnel Management*, 48(2), 179–202.
<https://doi.org/10.1177/0091026018801045>
- Simsekler, M. C. E., & Qazi, A. (2022). Adoption of a data-driven Bayesian belief network investigating organizational factors that influence patient safety. *Risk Analysis*, 42(6), 1277-1293. <https://doi.org/10.1111/risa.13610>
- Stewart, A. (2018). *Basic statistics and epidemiology: a practical guide*. CRC Press.
<https://doi.org/10.1201/9781315383286>

<https://nursinglance.com/>

NURSINGLANCE.COM