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Original Article

Effect of biostatistics course among undergraduate nursing students

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ABSTRACT

Objective: *To highlight the Effect of Biostatistics Course Among Undergraduate Nursing Students.*

Methods: *A Quasi Expermenatl study design was used. Study conducted at nursing institute of Peoples University of Medical & Health Sciences, Nawabshah & Affiliated colleges. All bachelors' Science nursing students (Generic) 3rd year 6th semester students were study subjects. Sample size was 150 student nurses. The questionnaire was developed and modified after literature searched . Data collected and analyzed through the SPSS version 25 software (Statistical Packages for Social Sciences).*

Results: *The mean age of the participants was 22 years, with a standard deviation of ± 1.517. Of them, 57.33% were female and 42.67% were male. "In which year should biostatistics education be taught in nursing school", responses were assessed; the findings showed that, in the pre-evaluation, the majority of responses (76%) and in the post-evaluation, the majority of responses (88%). the impact of pre- and post-training biostatistics as well as nursing students' perspectives on the field. When asked if they had previously received lessons in biostatistics (or statistics), studying students responded with YES in 47 (31.2%) and NO in 103 (688.8%) of the questions that were assessed. A significant difference was observed between the pre and post-effect (p <0.001).*

Conclusion: *it is concluded that the Effect of Biostatistics Course Among Undergraduate Nursing Students was highly significant with their pre and post training course.*

Keywords: *Effect, Biostatisitcs, Nursing Students.*

1. INTRODUCTION

Practicing clinicians must possess an elementary comprehension of biostatistics[1]. Today, biostatistics plays a significant role in clinical practice and public health decision-making, as well as aiding in the analysis and critical evaluation of the large body of accessible data [2,3] considering the tight connection to evidence-based medicine (EBM)[4]. sufficient mastery of biostatistics in terms of data design, processing, analysis, and interpretation is indispensable to deliver the best possible patient care[5].

For future medical professionals to have their skills fully developed, constant, high-quality training that imparts sufficient statistical knowledge is thus required[6]. Graduate medical students experienced stress, frustration, and nervousness when absorbing biostatistics. Many people thought statistics was a challenging subject. Before participating in statistics education, nurse students' primary attitudes were anxiety and skepticism; what's worse is that these intensely negative emotions persisted after the course ended[7].

Healthcare professionals have been counseled to carefully comprehend and adhere to the fundamental data of research before applying it to patient care due to the growing rigor of biostatistics, which has evolved from elementary to advanced statistical methods reporting in medical literature[8]. Studies that evaluated the types of statistical methods used in the nursing literature were found in several places. Of the papers reviewed, about 20% only used descriptive statistics, while the remaining 30% used statistical tests, such as the most popular Mann-Whitney U test and the Student's t-test, which was ranked as the second most often used statistical test[9]. The purpose of this study is to examine the behavior levels and biostatistics effect of students before and after they receive basic biostatistics training from the researcher. This will allow for an assessment of the program's effectiveness.

2. METHODOLOGY

The present Quasi-Experimental study design was conducted at Begum Bilquees Sultana Institute of Nursing (BBS-ION) Nawabshah, Thar Institute of Nursing & Health Sciences (TINHAS) Umerkot and Rana Liaquat College of Nursing (RLCON) Khairpur Mir’s in the duration of from 4th May 2023 to 21st July 2023. 150 participants were included Depending on all the students of 3rd Year 6th-semester students of BSN(Generic), and 50 Students from each Institute by using non-probability convenient sampling. The inclusion of the 3rd year 6thsemester undergraduate nursing students willing to participate and those who were not studying in 3rd year 6th semester and not willing to participate in the study were excluded

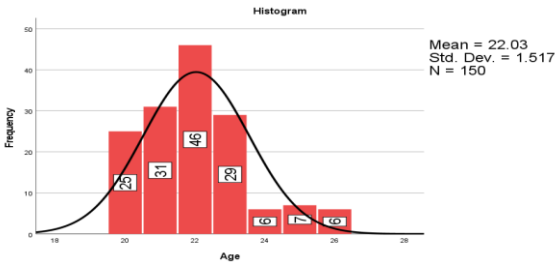
A survey was carried out as part of this study's objectives to assess the students' biostatistics instruction. The survey asked questions about student behavior during the program, demographic data, and the impact of biostatistics. This survey was completed by the students both before and after their biostatistics classes, and the results were assessed. Biostatistics courses throughout two weeks. Topics that have been authorized by the Pakistan Higher Education Curriculum Committee and the Pakistan Nursing and Midwifery Council[10].

Data was collected through a structured questionnaire containing inquiries about study variables such as name, age, sex, and effect of Biostatistics questions through a structured questionnaire. Data was analyzed by statistical package for Social Sciences version (SPSS) version 25. Quantitative data has been presented in mean and standard Deviation. Qualitative data was presented in

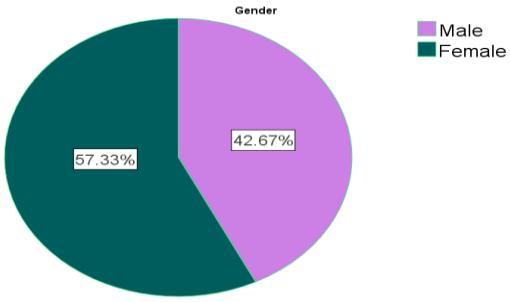
numbers and frequencies. A confidence level of 95% was used for the study. P value of <0.05 was considered statistically significant. A paired sampled t-test was applied for the association between pre & post results.

3. RESULTS

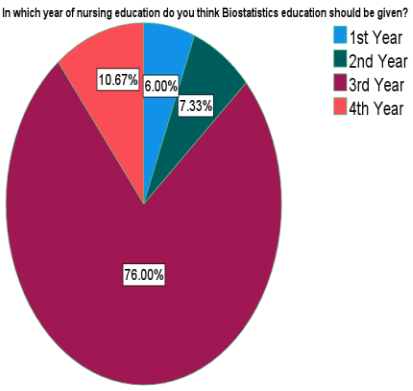
Graphs 1 and 2 presented the demographic data of the study participants. The mean age of the participants was 22 years, with a standard deviation of ± 1.517. Of them, 57.33% were female and 42.67% were male. “In which year should biostatistics education be taught in nursing school”, responses were assessed; the findings showed that, in the pre-evaluation, the majority of responses (76%) and in the post-evaluation, the majority of responses (88%), supported the third year, show in Graph 3 A and 3 B. Table 1 displays the impact of pre- and post-training biostatistics as well as nursing students' perspectives on the field. When asked if they had previously received lessons in biostatistics (or statistics), studying students responded with YES in 47 (31.2%) and NO in 103 (688.8%) of the questions that were assessed. A significant difference was observed between the pre and post-effect (p <0.001). Evaluations of the students before and after biostatistics training are given in Table 2. The frequency of "yes" responses after training was found to be higher than before training for all of the topics assessed, and this increase was shown to be statistically significant (p<0.001).



Graph: 1: Age



Graph: 2: Gender



Graph: 3A: Pre

Graph: 3B: Post

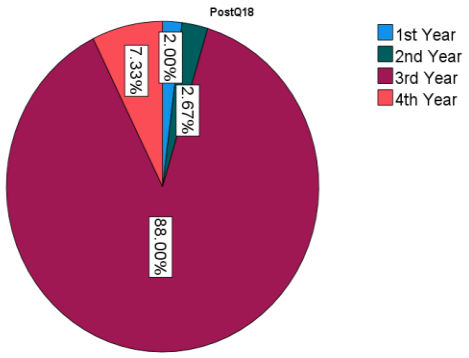


Table: 1: Pre- post-training evaluation of Biostatistics

Questions	Pre-Result	Post-Result	P Value
Have you been educated in Biostatistics (or Statistics) before?	Yes=47(31.2%) No=103(68.8%)	Yes=69(64%) No=54(36%)	< 0.001
Do you consider yourself proficient about biostatistics?	Yes=77(51.3%) No=73(48.7%)	Yes=127(84.7%) No=23(15.3%)	< 0.001
Do you think that you can assess an article statistically?	Yes=88(58.7%) No=62(41.3%)	Yes=134(89.3%) No=16(10.7%)	< 0.001
Do you think that biostatistics lesson will be useful for your future career?	Yes=140(93.3%) No=10(6.7%)	Yes=147(98%) No=3(2%)	
Is Biostatistics important for you?	Yes=143(95.3%) No=7(4.7%)	Yes=146(97.3%) No=4(2.7%)	
Should Statistics literacy be one of the important goals of the education in Nursing?	Yes=141(94%) No=9(6%)	Yes=148(98.7%) No=2(1.3%)	

Table: 2: Students' assessments regarding biostatistics before and after training

Questions	Pre-Result	Post-Result	P Value
I have basic information about biostatistics	Yes=80(53.3%) No=70(46.7%)	Yes=136(90.7%) No=14(9.3%)	< 0.001
I know the intended purposes of biostatistics	Yes=58(38.7%) No=92(61.3%)	Yes=135(90%) No=15(10%)	< 0.001
I have information about population and sample	Yes=91(60.7%) No=59(39.3%)	Yes=147(98%) No=3(2%)	< 0.001
I know the basic principles in the organization and summary of data	Yes=66(44%) No=84(56%)	Yes=139(92.7%) No=11(7.3%)	< 0.001
I have information about central tendency and location measurements and their places of use	Yes=60(40%) No=90(60%)	Yes=119(79.3%) No=31(20.7%)	< 0.001
I know about dispersion measurements and their places of use	Yes=44(29.3%) No=106(70.7%)	Yes=109(72.7%) No=41(27.3%)	< 0.001
I have information about the definition of hypothesis and types of error	Yes=85(56.7%) No=65(43.3%)	Yes=144(96%) No=6(4%)	< 0.001
I have information about parametric hypothesis tests	Yes=41(27.3%) No=109(72.7%)	Yes=135(90%) No=15(10%)	< 0.001
I have information about non-parametric hypothesis tests	Yes=32(21.3%) No=118(78.7%)	Yes=136(90.7%) No=14(9.3%)	< 0.001
I know which assumptions should be checked for hypothesis test	Yes=66(44%) No=84(56%)	Yes=129(86%) No=21(14%)	
I have information about statistical package program SPSS	Yes=32(21.3%) No=118(78.7%)	Yes=120(80%) No=30(20%)	< 0.001

4. DISCUSSION

Similar research was conducted on medical faculty students at a Turkish university. All of the students were given questions on biostatistics both before and after training, which included all of the factors and outcomes mentioned above. Although 68.0% of the students responded favorably when asked if they knew the fundamentals of statistics before training, this percentage increased to 95.7% following the training[12]. These findings are consistent with pervious research[12]. While biostatistics future career and importance in nursing was not significantly association[13,14]. A notably findings of this study was nurses basic information and purpose regarding biostatics which was highly significant. The basic information was included as difference between population and sample, data summarization, measures of central tendency and dispersion, hypothesis, its

types and their related errors, parametric and non -parametric test and SPSS for data analysis. This is in line with another study suggested that providing information about biostatistics was very essential[15,16].

Similarly, research was conducted on medical faculty students at a Turkish university, all of the students were given questions on biostatistics both before and after training, which included all of the factors and outcomes mentioned above. Although 68.0% of the students responded favorably when asked if they knew the fundamentals of statistics before training, this percentage increased to 95.7% following the training.After training, the percentage of people who knew the aim of biostatistics increased to 96.6% from the previous 81.5%.After training, the percentage of people who knew the aim of biostatistics increased to 96.6% from the previous 81.5%. The frequency of positive responses was 60.9% for the population and sample, 63.2% for fundamental data summarization principles, 54.7% for central tendency-location measurements, and 51.5% for variability measurements; however, following training, the rates increased to 95% and above. After training, positive answers were found for the use of statistics package programs[17].

5. CONCLUSION

it is concluded that the Effect of Biostatistics Course Among Undergraduate Nursing Students was highly significant with their pre and post training course.

REFERENCES

1. Alotaibi WA, Alosaimi AM, Alsulaimani NH. Family medicine residents' knowledge and attitudes towards biostatistics, Taif, Kingdom of Saudi Arabia. J Family Med Primary Care. 2022 Nov;11(11):7015.
2. Castro EMM. Bioestadísticaaplicada en investigaciónclínica: conceptosbásicos. Rev Med ClinCondes. 1 de enero de 2019;30(1):50-65.
3. Vargas R, Fernando L. La educaciónestadística en el niveluniversitario: retos y oportunidades. Revista Digital de Investigación en DocenciaUniversitaria. julio de 2019;13(2):67-82.
4. Al-Zahrani SH, Al-Khail BAA. Resident physician's knowledge and attitudes toward biostatistics and research methods concepts. Saudi Med J. octubre de 2015;36(10):1236-40.
5. Li C, Wang L, Zhang Y, Li C, Xu Y, Shang L, et al. Assessment of a block curriculum design on medical postgraduates' perception towards biostatistics: a cohort study. BMC Med Educ. 19 de junio de 2018;18(1):144.
6. Araoz-Melgarejo VA, Espinoza BM, Quiñones-Laveriano DM, De La Cruz-Vargas JA. Basic knowledge and attitudes towards biostatistics in sixth-and seventh-year medical students. Turkish Journal of Computer and Mathematics Education (TURCOMAT). 2021 Aug 7;12(14):1286-302.
7. Alotaibi WA, Alosaimi AM, Alsulaimani NH. Family medicine residents' knowledge and attitudes towards biostatistics, Taif, Kingdom of Saudi Arabia. J Family Med Prim Care 2022;11:7015-23.
8. Ganasegeran K, Ch'ng AS, Jamil MF, Looi I. Clinicians' perceived understanding of biostatistical results in the medical literature: A cross-

sectional study. Medicina. 2019 May 30;55(6):227.
9. Hayat MJ, Kim M, Schwartz TA, Jiroutek MR. A study of statistics knowledge among nurse faculty in schools with research doctorate programs. Nursing Outlook. 2021 Mar 1;69(2):228-33.
10. TOMAK L, CİVANBAY H. Evaluation of biostatistics knowledge and skills of medical faculty students. Journal of Experimental and Clinical Medicine. 2022 Jul 1;39(3):620-7.
11. Ganasegeran, K., Ch'ng, A., Jamil, M., & Looi, I. (2019). Clinicians' Perceived Understanding of Biostatistical Results in the Medical Literature: A Cross-Sectional Study. Medicina (Kaunas, Lithuania), 55(6), 227. https://doi.org/10.3390/medicina55060227.
12. Windish, D. M., Huot, S. J., & Green, M. L. (2007). Medicine residents' understanding of the biostatistics and results in the medical literature. JAMA, 298(9), 1010–1022. https://doi.org/10.1001/jama.298.9.1010.
13. SUNGUR MA. Importance of Biostatistics in Medical Researches. Duzce Medical Journal. 2021 Dec 12;23(3):232-3.
14. Ocakoğlu G, Kaya MO, Can FE, Atış S, Macunluoğlu AC. Nursing professionals' attitudes toward biostatistics: an international web-based survey. The European Research Journal. 2019 Apr 3;5(2):326-34.
15. Singh JP, Neupane S, Mehta RK, Deo GP. Assessing undergraduate students' knowledge regarding application of biostatistics in research at medical college. Journal of Chitwan Medical College.2022;12(40):3-5.
16. Daniel WW, Cross CL. Biostatistics: a foundation for analysis in the health sciences. Wiley; 2018 Nov 13. [LINK].
17. TOMAK L, CİVANBAY H. Evaluation of biostatistics knowledge and skills of medical faculty students. Journal of Experimental and Clinical Medicine. 2022 Jul 1;39(3):620-7.