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IMPACT OF VIRTUAL TRAINING ON URINALYSIS PSYCHOMOTOR PERFORMANCE IN LABORATORY EDUCATION

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BACKGROUND

The shortage of trained laboratory personnel has increased in recent years to a critical level. One contributing factor, is the paucity of training programs, and their limitations of capacity, to educate future generations of scientists. Research in other healthcare professions have allowed for the successful incorporation of simulation session as viable training techniques, but limited information has been published about the impact in all areas of clinical laboratory practice.

Purpose:

Evaluate the impact of virtual training on tactile Urinalysis laboratory skills.

HYPOTHESIS

This study explored the null hypothesis that virtual training in Urinalysis would not impact student psychomotor performance.

PARTICIPANTS

This study was conducted over the course of a two-year period and consisted of participants in two separate cohorts of within an MLS program. The first cohort served as the control and received only in-person laboratory experiences. The second cohort of students served as the experimental group, receiving abbreviated in-person experiences supplemented with virtual training in Urinalysis coinciding with the COVID-19 pandemic.

Demographics

African American	21%
Asian	42%
Caucasian	21%
Hispanic	16%
Female	84%
Male	16%

METHODS

A quasi-experimental quantitative study was used to examine the impact of virtual training. Laboratory practicals and microscopic image identification exams for Urinalysis were conducted in pre-test/post-test pairings for each cohort at the same timeframe within the course. The experimental cohort underwent the treatment of virtual training between the pre- and post-tests, while the control group did not have virtual training before the posttest, rather continued hands-on instruction. Cohorts were compared based on pre-test scores to determine level of prior knowledge. The growth between pre- and post-test scores was examined to determine the effect of the independent variable (instructional methodology) on the dependent variable (psychomotor skills).

RESULTS

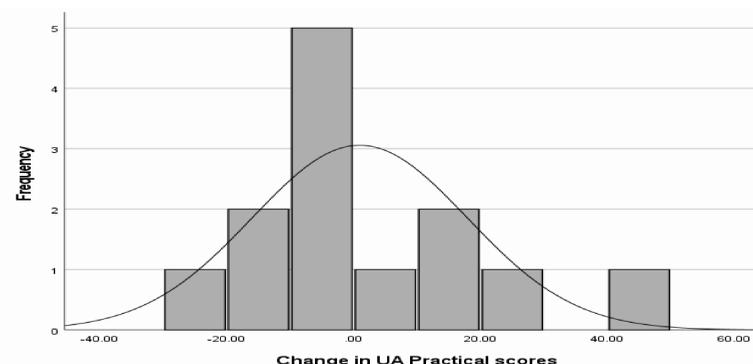
Prior knowledge was not a confounding variable between groups

Levene's Test for Equality of Variances

		F	Significance
UA Practical Pretest scores	Equal variances assumed	0.051	0.826

The Levene's Test for Equality of Variances generated a significance greater than 0.05, signifying there was homogeneity of variances, and scores between the two treatments could be compared.

Delta in Practical scores was non-parametric



RESULTS

Results of Mann-Whitney U test

N	13
U	22.0
z	0.143
p-value	1.00
Hypothesis Decision	Retain the null hypothesis

The level of significance was set to 0.05 and the exact p-value was found to be 1.00, therefore no statistically significant difference occurred in the median change from pre- to post-tests between modalities of instruction.

CONCLUSIONS

Statistical analysis supported the null hypothesis that incorporation of virtual laboratory training in the discipline of Urinalysis in lieu of traditional, hand-on laboratory experience, does not impact the student psychomotor performance.

These results directly impact practitioners in the field of Medical Laboratory Science education by supporting the inclusion of virtual training as a long-term viable educational methodology. Incorporation of virtual training in education programs could offer a mechanism for training of increased numbers of students and professionals entering the field.