Analysis of Student Pharmacists’ Errors When Simplifying Complex Medication Regimens

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BACKGROUND

• Complex medication regimens with distinct dosing quantities and frequencies can lead to poor patient outcomes, particularly when polypharmacy is present1-2. In 2008, the Institute of Medicine published a report, “Standardizing Medicine Labels,” which discussed a Universal Medication Schedule (UMS) intended to remove the variability in patient directions on prescriptions.

• P1 and P3 student pharmacists at 3 US colleges of pharmacy completed a required laboratory activity to organize a complex medication regimen modeled after previously published research describing the ability for patients to adhere to the UMS3.

OBJECTIVE

• To measure student pharmacists’ ability to organize a complex prescription regimen by analyzing documented errors during a standardized laboratory exercise.

METHODS

• Students organized 7 fictitious medications with varying frequencies, dosing quantities, and instructions over a 24-hour period using a medication box. A picture documenting each student’s activity was used for data analysis.

• Errors were categorized as a medication quantity or frequency error. Chi-square analyses compared performances between medications, students, and schools. Analysis was conducted using SPSS (IBM Corporation, Armonk, NY, Version 23).

RESULTS

• 372 P1 and 459 P3 students (99.9% RR; n=831) consented across 3 schools.

• 25.2% of student pharmacists had an error when completing the activity (Mean 0.59 Errors; SD 1.27; Range 0 – 10).

• Medication instructions with 2 tablets compared to 1 tablet were significantly more likely to have quantity errors (7.05% vs. 0.74%, p<0.001).

• Medication instructions with >1 dose/day were significantly more likely to have frequency errors than 1 dose/day regimens (1.01% vs. 0.24%, p=0.028).

• P1 students were more likely than P3 students to have frequency errors (1.29% vs. 0.69%, p<0.001) but not quantity errors (2.65% vs. 2.76%, p=0.699).

• There were significant differences between schools for quantity errors (3.63% vs. 2.01% vs. 2.41%, p<0.001) and frequency errors (0.91% vs. 0.49% vs. 1.50%, p <0.001).

IMPLICATIONS

• New educational opportunities may be needed to help student pharmacists further improve organizing complex medication regimens.

• Similar simulations can potentially be implemented into practice to determine if patient outcomes can be improved.

REFERENCES