DRUG CALCULATIONS IN NURSING EDUCATION: IS MATHEMATICS A PROBLEM?

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This study concerns the teaching of drug calculations in nursing education. It is part of a larger study and focuses on the first year of a three-year nursing program when the students are introduced to drug calculations. The students who attended the first year on the program was divided into smaller groups. We followed one group where the lecture and problem-solving session was video recorded.

It is well known that drug calculations are a critical component in nursing practice. Nurses need to do drug calculations correctly and as part of their nursing education must take a drug calculation test obtaining no errors in the results. However, in spite of drug calculation tests many adverse events occur in nursing practice (e.g., Røykenes & Larsen, 2010). Studies of nursing practice show that mathematics enters practices in a rich variety of ways and that it is not advisable to avoid the complexity of a situation by only using standard methods to capture its visible arithmetic and teach it (Coben & Weeks, 2014). To restrict the teaching to an elementary use of mathematics will not cover all the knowledge that is actually relevant to practice. In routine use, mathematical reasoning can be almost invisible and many artefacts in the nursing profession often depends on this invisibility. But at times nurses will need to understand underlying mathematical models to sort out what is happening or what has gone wrong (Pozzi, Noss & Hoyles, 1998).

The results of the current study show that the teaching of first-year students did not support conceptual understanding of mathematics including discussions about mathematical reasoning or relevant mathematical concepts. Instead, the students were advised to forget their previous mathematical skills – in particular if they felt insecure about mathematics – and apply “safe” methods with a strong focus on instrumental use. For example, in drug dose calculations a triangular arrangement of dosage (d), concentration (c) and volume (v) was used in relation to the “formula” d=cv, instead of reasoning about how to solve an equation. Discussions about the use of mathematics and underlying models were absent in the teaching.

References

