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Tablet Splitting Is a Highly Inaccurate and Potentially Dangerous Practice, Says Drug Study

Medical experts have issued a warning about the common practice of tablet splitting, after a study found that nearly a third of the split fragments deviated from recommended dosages by 15 per cent or more.

Their study, published in the January issue of the Journal of Advanced Nursing, points out that the practice could have serious clinical consequences for tablets that have a narrow margin between therapeutic and toxic doses.

And they are calling on manufacturers to produce greater dose options and liquid alternatives to make the practice unnecessary.

Researchers from the Faculty of Pharmaceutical Sciences at Ghent University, Belgium, asked five volunteers to split eight different-sized tablets using three techniques commonly used in nursing homes.

They found that 31 per cent of the tablet fragments deviated from their theoretical weight by more than 15 per cent and that 14 per cent deviated by more than 25 per cent. Even the most accurate method produced error margins of 21 per cent and eight per cent respectively.

"Tablet-splitting is widespread in all healthcare sectors and a primary care study in Germany found that just under a quarter of all drugs were split" says study lead Dr. Charlotte Verrue.

"It is done for a number of reasons: to increase dose flexibility, to make tablets easier to swallow and to save money for both patients and healthcare providers. However, the split tablets are often unequal sizes and a substantial amount of the tablet can be lost during splitting."

The five researchers comprised a pharmacy student, researcher and professor, an administrative worker and a laboratory technician, ranging from 21 to 55 years of age. With the exception of the technician, none of the other study participants had tablet-splitting experience. The authors believe this replicated nursing home conditions where splitting is not always performed by professional nurses.

Between them they split tablets into 3,600 separate quarters or halves using a splitting device, scissors and a kitchen knife. The eight different tablets were different shapes and sizes, three were unscored, three had one score

line and the others had two.

The drugs were prescribed for a range of health conditions, including Parkinson's, congestive heart failure, thrombosis and arthritis.

After splitting, each fragment was weighed to see how much they deviated from the theoretical weight.

Key results included:

- * Using a splitting device was the most accurate method. It still produced a 15 to 25 per cent error margin in 13 per cent of cases, but this was lower than the 22 per cent for scissors and the 17 per cent for the knife.

- * The splitting device produced a deviation of more than 25 per cent in eight per cent of cases, compared with 19 per cent for the scissors and 17 per cent for the knife.

- * Some drugs were much easier to split accurately than others. The easiest to split produced an overall error margin (15 per cent deviation or more) of two percent and the most difficult tablets produced an error margin of 19 per cent.

"Tablet splitting is daily practice in nursing homes" says Dr Verrue. "However, not all formulations are suitable for splitting and, even when they are, large dose deviations or weight losses can occur. This could have serious clinical consequences for drugs where there is a small difference between therapeutic and toxic doses.

"Based on our results, we recommend use of a splitting device, when splitting cannot be avoided, for example when the prescribed dose is not commercially available or where there is no alternative formulation, such as a liquid".

"Staff who are responsible for splitting tablets should receive training to enable them to split as accurately as possible. They should also be made aware of the possible clinical consequences of dose deviations".

"We would also like to see manufacturers introduce a wider range of tablet doses or liquid formulations so that tablet splitting becomes increasingly unnecessary."

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