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Letter to the Editors

Self report may lead to underestimation of 'wrong dose' medication errors

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We read with great interest the article by Ferner [1], which focused on the methodological difficulties of detecting medication errors. The author has acknowledged the limited reliability of epidemiological data collected by the self-report method. There is a high possibility that spontaneous error report leads to significant underestimation of true error frequency, since personnel may omit to report errors. On the other hand, direct observation, especially by trained, disguised observers, is considered the most efficient and accurate method for detecting medication errors [2].

We believe that the self-report method may further be associated with underreporting of specific medication error types, especially with dose errors. In a recent multinational study, Valentin *et al.* [3] used self report to assess the types of parenteral drug administration errors in Intensive Care Units (ICUs). They found that the frequency of dose errors was much lower compared with the frequency of administration time errors and dose omission errors. In contrast, in five ICU studies [4–8] based on error direct observation, wrong dose was observed and included among the three more frequent error types in all five studies, while administration time and dose omission errors were observed in four and three of these studies, respectively, and were included among the three more frequent error types in only two of these five studies each.

There are two reasons why different medication error types may not be equally reported. First, personnel must become aware of an error in order to report it and, compared with administration time and dose omission errors (which can be detected through ICU daily charts), dose errors are much less likely to be noticed. Second, well-described self-report bias includes social desirability bias and self-esteem bias; according to them, respondents tend to reply in a manner either viewed favourably by important others or consistent with their self-esteem perceptions, respectively [9]. Dose errors have been primarily attributed to individual deficiencies, such as inadequate mathematical skills or medication knowledge, limited experience and failure to follow policies (i.e. properly checking drugs) [10]. In contrast, administration time and dose omission errors have generally been associated with organizational deficiencies, mainly increased workload. Due to the subconscious tendency to be socially agreeable and protect self-esteem, it seems plausible to expect that self-reporting individuals would more likely underreport medication error types associated with personal deficiencies.

If dose error underestimation is really a problem in self-report studies, this could lead to erroneous conclusions about medication error epidemiology and contributing factors, and, more importantly, to ineffective preventive interventions. The hypothesis that dose errors are underreported during self-report could be tested by studies designed specifically for comparing the frequencies of different error types detected by direct observation *vs.* self-report. However, simultaneous medication error detection by these two methods during a study could lead to increased error self report, because even if disguised observation is used, personnel may suspect the true reasons for the observers' presence (since they are concurrently asked to self-report errors).

We would therefore suggest that a more appropriate way to compare error types between direct observation and self report would be by conducting the study sequentially, in two phases. During phase 1, only self report would be used for medication error detection, whereas during phase 2 self report would be combined with disguised observation. This study design would allow comparison of self report error frequency between phases 1 and 2 (to test whether even disguised observation can affect error self report), and comparison of self report error frequency during phase 1 *vs.* direct observation error frequency (to test whether certain error types are underestimated during self report). To minimize bias, individuals asked to self-report errors and being observed in the two study phases should be the same, while factors contributing to errors (e.g. nursing workload) should not differ much. Finally, employing a large sample and a multicentre study

design could minimize random variation in error incidence between the two study phases.

Competing interests

None declared.

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