

May 18, 2011

Dear Editor:

Re: Response to NR letter about the work schedule paper:

Thank you for this opportunity to bring attention to our research linking nursing environment and patient outcomes (Trinkoff et al., 2011). Although the writer indicates that "this study was limited to staffing and mortality data," the emphasis of this paper was not staffing, but on work schedule (e.g. work hours, shifts, time off) with staffing data included as a control variable, in order to identify the unique impact of nursing schedules on patient mortality. Though previous research has documented the health effects of such schedules on nurses (Scott et al., 2007; Trinkoff, Le et al., 2006, 2007) and on patient care errors (Dorrian et al., 2006; Rogers et al., 2004; Scott et al., 2006) the impact of schedules on patient outcomes has not been extensively studied. Our research adds to this knowledge base by providing critical information on the adverse impact of nurses' work schedules on patients.

From a human factors (HF) engineering perspective, our study represents an advance over previous work by including a wide array of scheduling factors, with subdomains constructed using principal components analysis, rather than simple counts of measured items. Our co-author Dr. Ayse Gurses, a HF/systems engineer, has written about the impact of performance obstacles in nursing from an HF/systems engineering perspective that has helped inform our work (Gurses & Carayon, 2007; Gurses, Carayon & Wall, 2009). Your letter refers extensively to Gosbee & Gosbee (2005), who offer an overview of HF in health care that was updated in 2010 (Gosbee & Gosbee, 2010).

Although they were not included in this article, the "physical, cognitive, and organizational factors" you cited from Gosbee & Gosbee as necessary for such research, were also part of our study but are reported elsewhere. Our recently published article relates physical and psychological job demands, nursing work environment and patient safety factors, in addition to work schedules, to patient outcomes (Trinkoff et al., 2011). We agree with your citation from Gosbee & Gosbee (2005) that nursing needs to "...address extended workdays, provide rest periods..." and have written about changes needed to reduce the impact of extended work schedules (Geiger-Brown & Trinkoff, 2010a; 2010b; Trinkoff et al., 2006).

Finally, re: the description of the linkage of schedule to mortality as a "leap," this is a prevalent attitude in nursing that needs to be reconsidered. Actually, scheduling and work hours have been related to reduced sleep, which directly affects neurobehavioral functioning (Belenky et al., 2003; Lim & Dinges, 2010; Van Dongen et al., 2003). In a recent study of nurses, those working successive 12-hour shifts slept only 5.5 hours between shifts on average, with some showing attention lapses in reaction time tests (Geiger-Brown, Rogers, Trinkoff, Kane, Scharf, Bausell, Under review). The influence of work schedules on performance is a great concern in all safety-sensitive industries where performance deficits can harm the public. A systematic review of literature that examined the relation between physician hours and outcomes found a decrease in mortality following the institution of work hour limits (Baldwin et al., 2011). Dorrian's recent research (2008) also showed that sleep-deprived nurses have an increased risk for patient care errors. Because schedules are modifiable and have already been shown to adversely affect nurse health, performance, error rates and patient outcomes, it is critical for nursing to consider the continued use of extended work schedules in patient care.

Sincerely,

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