

F. KNOEFEL, S. ROBICHAUD, M. MAKRAMALLA, M. BILODEAU, T. GRANT, H SVEISTRUP, J. JUTAI, R. GOUBRAN, C. GAUDET. **How much time do older adults spend in bed?** *Gerontechnology* 2016;15(suppl):152s; doi:10.4017/gt.2016.15.s.729.00 **Purpose** Little research has been done on objective measurements of time in bed (TiB) in the older adult (OA) population^{1,2}. However, some work demonstrated that self-rated sleep duration could be linked with wellbeing^{3,4}. This project therefore explores the hypothesis that OAs spend more TiB when they feel unwell. **Method** S4 Sensor Pressure-sensitive mats were installed under the mattresses of 22 community-dwelling OAs (77.1 ± 6.4 yrs, 18 females) from Ottawa, Canada for three to twelve consecutive months. Data from the mats and clinical information on general health status were collected monthly. An algorithm was developed to determine the number of hours spent in bed over a 24 hour period: from noon to noon the following day. Means and standard deviations (SD) of TiB were calculated for a total of 1,115 days (26,760 hours). The initial goal was to identify two to three outlier days ($>1.3 \times SD - 2.5 \times SD$) per participant to narrow the first analysis. These data points were then compared to the clinical notes in order to establish the presence or absence of illness during increased TiB days. **Results & Discussion** Analyses were completed on seven OA (77.0 ± 6.2 yrs, 5 females) at the time of publication. On average, they spent 9.0 hours in bed over a twenty-four hour period with individual variability ranging from SD of 0.9 to 2.4 hours. In five out of seven OA, identified outlier days correlated to documented illness in the clinical notes. For instance, OA 7 spent 18.8 hours and 16.8 hours in bed on May 4 and 5 (10.6 ± 2.1 hours, cut-off $2.5 \times SD$) after reporting ill from May 3 to 8. OA 6 spent increased TiB Aug 25 to 31, with one identified outlier day on August 26 at 11.3 hours in bed (7.4 ± 1.8 hours, cut-off $2.3 \times SD$). Similarly, OA6 reported undergoing a cholecystectomy on August 24. As expected, the initial analysis of pressure mat data is showing an increase in TiB on sick days. Further analysis of the current data may lead to a better understanding of time in bed patterns in the OA population, both when healthy and sick. In the future, this technology could be used to help prioritize home care visits.

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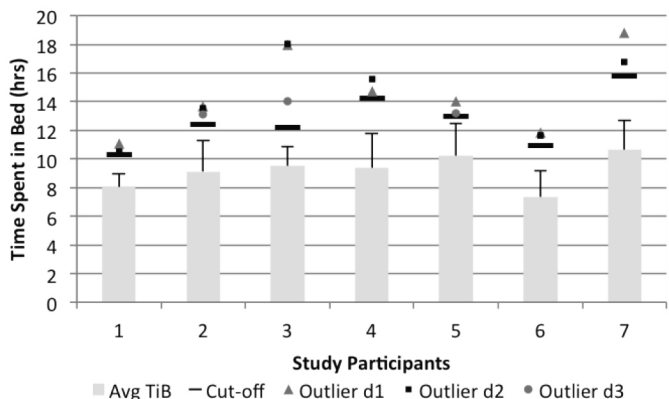


Figure 1. Overview of average time in bed, cut-off values and outlier days in hours over a 24 hour period per participant