We consider estimating the grouping (exposure) effect on survival time from observational data when, in addition to the lack of randomization, the data constitute a length-biased sample; we hence term this a double-bias problem. We introduce two approaches based on weighted and double robust estimating equations for estimating grouping effect. We apply the proposed methods to a set of length-biased survival data collected as part of the Canadian Study of Health and Aging (CSHA) to compare survival of subjects with dementia among institutionalized patients versus those recruited from the community and depict their adjusted survival curves.