

## Reply to “The pain, the oncologist”

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Dear Editor-in-chief,

We appreciate the comments from Dr. Mercadante.

We performed a cross-sectional study [1] showing associations between symptoms such as sleep and pain. This is a first step in establishing a relationship between observations. However, the focus of our study was not to explore causal relationships between pain and sleep. We sought to explore, in general, how other symptoms are associated to pain intensity. We would also confirm the results from a previous study [2], where sleep problems were associated with pain intensity.

We agree that prospective longitudinal studies are needed in order to understand causal relationships between an outcome and other factors, in this case, to improve the understanding between pain and sleep disturbances. An even better approach is to conduct a prospective intervention study where the aim is to affect one of the independent (or explaining) variables in a model which is established through cross-sectional or prospective observational studies. In fact, our research group is in the process of designing a prospective intervention study, a randomized phase III study with a specific drug group aiming to improve sleep quality. A thorough evaluation of the effect on sleep quality and exploring associations of improved sleep quality and other patient-reported outcomes will increase our understanding of possible causal relationships between, e.g., pain and sleep.

As outlined by Dr. Mercadante, the unselected cohort of cancer outpatients included in our trial raised special attention from the reviewers. One of our research questions was to examine the prevalence of pain at an outpatient

oncology service. A mix of cancer patients, both curative and palliative, attends the outpatient department. The principal organization of this outpatient department is similar to most oncology outpatient departments in Norway. Selecting a subcohort of these patients would have generated a biased estimate on the prevalence of pain in this population of cancer patients, which was an issue we sought to avoid.

In order to optimally understand the pain prevalence, both treated pain and untreated pain, knowledge on pain medication is helpful and such data would have been of benefit to evaluate the relatively low mean pain intensity scores.

Dr. Mercadante questions whether the prevalence of breakthrough pain (BTP) was estimated in the entire cohort of included patients or only a subcohort of patients with pain. As stated in the article, we estimated the prevalence of BTP both in the entire cohort (prevalence of 21 %) and in those patients reporting clinically significant pain (prevalence of 50 %).

**Conflict of interest** The authors declare no conflicts of interest and have full control of all primary data. If requested, I will allow the journal to review the data.

### References

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