Background & Methods
Fatigue is a common symptom reported by cancer patients (pts) and has been previously documented to affect patient quality of life. A real-world data survey was designed to evaluate, from the pts perspective, the fatigue effect and treatment adherence. A survey was created in a digital format. This was sent randomly and replied anonymously by users of the Belong app. A dedicated social network for cancer pts and their caregivers. Belong leveraged both push notifications as well as DPRNs (digital patients reported outcome feature) which appeared on user’s apps dashboards for their increased engagement.

Results
505 replies were received from pts (85%) and caregivers (15%). The data was then extracted from the digital platform and analyzed. A statistical mathematical predictive model was utilized. A machine learning analytical model was programmed to obtain the results. The most common diagnosis were Breast Cancer, Lung and colorectal cancer. (Figure 1) 67% of the pts were on active treatment at the time of the survey and 12% finished the treatment less than 6 months before (Figure 2). 66% of the pts experienced daily fatigue (described as mild, moderate and severe) and 17% experienced it weekly (Figure 3). As a direct result of fatigue, 30% of all pts reported that their ongoing treatments were delayed, stopped or changed (poor adherence; Figure 4). Patients were also asked if the physical impact fatigue has on them and rated it from 1 (no fatigue) to 10 (severe fatigue). 137 (27%) of the total number of replies (mainly advanced breast and lung cancers) pts reported severe fatigue and 19% of them confirmed poor treatment adherence (Figure 5). However, better adherence was seen in the subgroup of pts which experienced mild to moderate fatigue.

Conclusions & future prospects
This survey describes the prevalence and adverse impact of severe fatigue present in certain cancer pts subgroups (advanced breast and lung cancers) which can alter significantly their adherence to planned treatments. Uniquely, while poor treatment adherence was observed in some cancer diagnosis, most of the patients who experienced mild to moderate fatigue maintained their treatment schedule. Effective strategies and efforts should aim to solve this common side effect and its deleterious consequences. Future research will include machine learning methods, such as decision tree models that enable distinct predictive associations for different measured parameters. This could become a valuable tool for side-effects prediction and lead to early detection, effective treatment and better patient’s outcomes.

New machine learning insights
One example for such an association was found in this study for cervix uteri cancer patients reporting fatigue that significantly affected their physical condition and their chance for developing depression.

References