Improving patient outcomes towards more personalized digital solutions: Case Helsinki University Hospital's data and BCB Medical's MyHealth digital PROM analysis -Use of Information Technology in Outcome Measurement

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Introduction

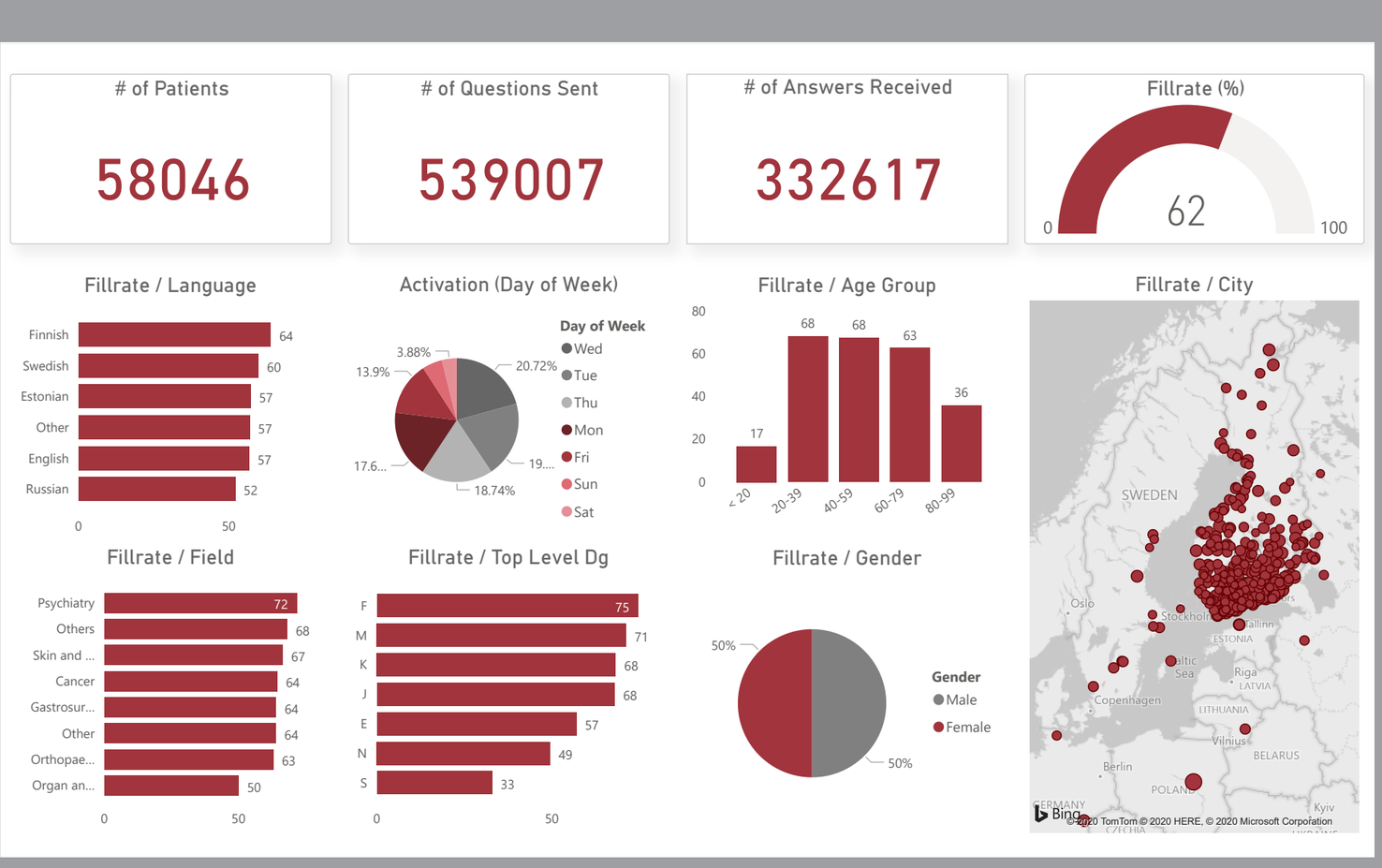
In all medical conditions, especially chronic illnesses, the patient perspective on treatment outcomes is of great interest to healthcare professionals and anyone financially invested in this domain. Patient Reported Outcome Measures (PROMs) integrated with Electronic Medical Records (EMRs), can be utilized for various applications ranging from economical estimations to improvements in quality of care. Therefore, getting a lot of high-quality PROM data is a key factor for reliable analyses. Currently, BCB Medical Ltd. has built and manage over 110 disease specific patient monitoring systems in Finnish University Hospitals, most with a national coverage. ICHOM measurements are utilised primarily in the PROMs with some small local variation proposed by the health care professionals.
Compared to more outdated methods to collect data such as paper forms and telephone interviews, modern IT solutions can bring significant improvements. Modern IT solutions remove obstacles regarding patient logistics and utilise a structured data format for improved analysis. The goal of our project is to identify the most significant factors effecting the collected PROM quality and magnitude.

Methods

We have analysed data collected during Feb. 4th, 2018 to Feb 21st ,2020, that includes 58 046 patients and we have sent 593 007 digital questioners that are integrated to the patient's treatment path. 332 617 patients responded to the digital questioners. Variables analysed included patient demographics, such as: native language, age, gender and city of residence.

Results

Variables that indicate above average answer rate, being above 62%, include: Finnish native language (64%), age of 20 to 39 yrs. (68%) and age of 40 to 59 yrs. (68%) and age of 60 to 79 years (63%). Also included in the analysis were disease and treatment process related variables such as area of treatment and the categorized top-level diagnosis. Among these, psychiatry, skin & allergy, cancer and gastrosurgery & enterology accounted for above-average answer rates.In this phase of the study no statistics analysis is used as data is descriptive.



Conclusions

By combining patients' answers to data found in EMRs, such as demographic information, we gained insight of the importance pf accommodating to the respondent in order to improve the efficiency and accuracy of digital questionnaires. For example, not presenting the questionnaire in the patient's native language, or not providing enough notifications and instructions to elderly patients constituted an issue. Using digital questionnaires to follow PROMs and automatically attaching this information to EMRs, has the potential to solve issues of this kind.
By responding to questionnaires off-site, more time can be used on-site to focus on the patient encounter. Moreover, by complementing with automatic reminders (for example email and text messages) concerning unanswered questionnaires, a better accuracy can be achieved on cyclic questionnaires.
As next step we will be focusing on the following questions: Can this improvement be measured? Can we use data from these information systems to make decisions on how to increase the amount of digital responses versus traditional means? Can we use statistical data to build machine learning models to optimize the parameters in these information systems, for example patient reminder cycles and answer fill rates? Could we make international comparisons when ICHOM measures are used?

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