Experienced quality of an orthopaedic consultation prepared with digital history taking and prediction of diagnosis and treatment

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Introduction

During an outpatient consultation, the differential diagnosis and appropriate treatment are primarily determined based on the history taking of the patient and confirmed with physical examination and possible evaluation of medical imaging results. The orthopedic surgeon must perform these tasks within the short duration of a consultation and communicate the results to the patient as clearly as possible. The experienced quality of the consultation by the patient depends on many factors such as the duration of the consultation, confidence in the orthopaedic surgeon, empathy of the orthopaedic surgeon, communication and the expectations of the patient (Waters et al., 2016).

For a patient, a consultation can be intimidating while receiving a lot of information in a short time. Research has shown that patients have difficulty remembering the information offered to them during consultations, and in particular medical information (McGuire, 1996). In addition, about half of what patients remember appears to be inaccurate (Kessels, 2003). Another problem faced by patients is that the information presented during a consultation is often poorly understood (Wills, 2009). Given the number of patients who need

orthopaedic care, there is little to no possibility to increase the duration of the consultation with the orthopedic surgeon. However, according to orthopedists within St. Anna, the above factors have a negative influence on the ability to provide information to the patient in an understandable way and thus to meet the expectations of the patient. In addition, as mentioned earlier, the orthopaedic surgeon has the complicated task of determining the differential diagnosis and appropriate treatment within the short duration of a consultation on the basis of the history and physical examination and transferring the results to the patient. According to orthopedists within St. Anna, the time pressure ensures that they cannot always prepare well for a consultation, which can compromise factors such as empathy and good communication.

In other words, the quality of an orthopaedic consultation can be improved. A previous study conducted within the St. Anna hospital investigated whether patients' medical knowledge can be increased by offering personalized information to osteoarthritis patients before a consultation takes place (Timmers et al., 2018). This has shown that offering personalized information to osteoarthritis patients before the consultation takes place has a positive impact on both the real and self-reported medical knowledge of the patient. It is expected that increasing medical knowledge will also increase the experienced quality of the clinical consultation by the patient because the expectations of the patient are more realistic and because the patient is better able to communicate with the orthopedic surgeon.

In addition to the study by Timmers et al. (2018) in which patients with a high risk of osteoarthritis of the knee were selected in advance, the current study will provide personalized information to patients by applying machine learning techniques based on the most likely diagnosis. These machine learning techniques can be used to predict diagnoses and treatments and in turn these predictions allow personalized information to be offered to the patient via a mobile application. The models are made based on already implemented digital history questionnaires (usual care) that are completed by patients before they visit the outpatient clinic. In addition to providing personalized information to patients, the digital history taking questionnaire and the predictions can be used to support the orthopedic surgeon. The orthopedic surgeon can use the information to prepare the consultation and it is expected that the orthopaedic surgeon will be able to give a better consultation as a result.

In conclusion, the purpose of St. Anna is to improve the patient-experienced quality of outpatient consultations. For this we use machine learning techniques that we apply to an already existing method, namely the taking of digital history questionnaires prior to the first consultation. With this we provide less general but more personalized information to patients and we support the orthopedic surgeon.

Research goal:

With this study we want to investigate whether taking digital history

questionnaires and providing personalized information to patients improves the experienced quality of an outpatient consultation.

Method

Between April and June 2021, patients with complaints to the knee, hip, or shoulder and over 18 years of age will be asked to participate in a randomized controlled examination. This study investigates the effect of providing personalized information to orthopaedic patients prior to outpatient consultation and conducting digital history questionnaires on the quality of outpatient consultation.

Informed consent and ethical considerations

Patients over the age of 18 and referred due to complaints to the knee, hip or shoulder will be asked to participate in this examination after they have made an appointment for an outpatient consultation. Patients who are interested will receive an email with all the necessary information about the research for informed consent. Patients will have a period of two days to process this information. If patients have any questions, they will be able to contact the lead or co-investigator. Patients will indicate their informed consent by signing an online informed consent form. This form will also emphasize that the patient's data will be kept confidential and secure.

Selection of participants

The suitability of patients will be assessed during the patient's first contact with the hospital for planning a clinical consultation. Patients must speak Dutch, be in possession of an e-mail address and have a smartphone or tablet. In addition, there should be at least 6 days between making the appointment and the consultation to allow patients in the experimental group to use the intervention.

Randomization

Selected patients will be assigned to either the control group or the experimental group immediately after giving informed consent. Randomization will be carried out without block or stratification restrictions. Participants only receive information about the study by email. In addition, participants can immediately complete the standard baseline questionnaires (usual care) via this e-mail. One questionnaire is added for the study (baseline knowledge questionnaire, 13 questions). Patients assigned to the experimental group will receive an additional email with instructions on how to download the app and the patient's personal code. After this, both groups receive the same questionnaires related to the patient's actual and self-reported medical knowledge at the same time at three times: immediately after registration, two days before the outpatient consultation takes place and 1 day after the outpatient consultation has taken place. In addition, both groups receive a questionnaire about the experienced quality of the consultation 1 day after the outpatient consultation. If necessary, participants will receive a maximum of two emails to remind them to complete the questionnaires.

Burden and risk to the patient

This is a patient-related data study that is in line with the usual care process. In St. Anna's, the usual care for the first consultation is that patients fill in a digital history questionnaire and that they prepare for the first consultation with the help of an app. This extends this by taking the same questionnaires related to the patient's actual and self-reported medical knowledge at three times in the experimental and control group. The general preparatory information shall be replaced by personalised information in the intervention group. In addition, a questionnaire about the experienced quality regarding the consultation is taken 1 day after the consultation. There is therefore a slight burden on the patient with little to no chance of negative consequences.

Motivation exemption WMO duty

Because there is light load for the patient and little to no risk when conducting this study, we ask the METC to exempt this study from the WMO obligation and that no additional insurance is required to carry out this study.

Contact details

Removed due to privacy

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