the management of chronic illnesses, such as diabetes treatment, including good users’ acceptance and an increase in their knowledge. Knowledge acquisition is generally seen as a necessary condition for behavioral change. Applications with virtual humans offer a dynamic, interactive and easily accessible approach to enhance users’ knowledge. We did not find published literature on the use of virtual humans to educate people with OA.

**Objectives:** To develop a web application to support education of caregivers and people with OA.

**Methods:** This is a proof of concept study, which builds on our previous experience with virtual assistant applications. For example, “Virtual Pharmacy” is intended to improve self-medication consultation skills between students/pharmacy professionals and community pharmacy clients, whilst “VASelCare” aims to facilitate self-care of older people with type 2 diabetes (REF?).

The main principle underpinning the development of our application is the use of gamification embedded in a narrative with a double purpose of maintaining user engagement and enhancing the play experience. This option has in consideration that OA is more prevalent among the seniors and is supported by a study showing that embedding narratives in mobile games enhances the play experience of this age group.6

In our approach, the narrative comprises dialogues aiming to ease and stimulate the search for new knowledge, and to educate for disease management and health promotion.

**Results:** So far, we have developed NOA, a virtual assistant that interacts with users through speech (voice and subtitles) plus facial and body animations. NOA is a 2D cartoon female model that plays the role of a character who suffers from OA and provides information about her own experiences with the disease. At the end of each dialogue, a quiz tests users’ knowledge. Awarding points and digital badges for correct answers, or showing the right answers when the user fails, are expected to motivate users to play and learn more. This application will be placed in the “Portuguese League Against Rheumatic Diseases” website to convey easy access.

**Conclusion:** Development of a virtual assistant web application to promote education on OA, resorting to a narrative approach and gamification principles, is ongoing. Future work includes testing the application with experts and patients.

**REFERENCES:**


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**OP0288-PARE** WHAT DO YOUNG PEOPLE THINK ABOUT CONTINUOUS DATA COLLECTION IN CLINICAL RESEARCH AND THE TYPES OF ELECTRONIC DEVICES?

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**Background:** The use of wearable devices are of increasing interest to enable continuous data collection during drug trials. This is particularly pertinent when involving young people who are “digital natives” and have grown up with such technologies.

**Objectives:** To ascertain opinions from young people regarding the design of wearable devices and the use of continuous data collection for a future clinical drug trial for juvenile idiopathic arthritis (JIA).

**Methods:** A three hour face-to-face patient involvement session was held in a young person friendly venue in central Manchester on the 8th December 2018. Young people with a rheumatic disease were invited to participate using event flyers provided in local rheumatology clinics. Members of a national youth advisory panel, Your Rheum, were also invited to attend. Data was collected in both large and small group discussions and included: a ranking exercise involving the use of voting cards, emojis and pictures of electronic devices to aid conversations. In addition, an online survey was also developed and uploaded to http://your-rheum.org for young people to complete if they could not attend the event in person. Open questions (requesting free text answers) ranged from general thoughts and concerns about continuous data collection, device preferences and features, to examples of unattractive devices.

**Results:** Eight young people attended the event (M=5, F=3, 11-19 age range). All males were under 14 years of age. One young person completed the online survey (F=1). All participants regularly used some form of an electronic device and were generally willing to use a wearable device for continuous data collection, although consideration of school regulations (e.g. uniform policies) and potential bullying was necessary. Participants reported that they would choose a device based on its viability, look, comfort and functionality. For instance, the device would need to be discrete in terms of size, muted (no sounds or vibrations) and removable. The preference of device type differed by gender though a watch and patch were in the top three favourite devices for all. Key features included the
ability to switch devices on and off, send reminders, chat to other young people and to track their own data. Some caution was expressed about a device monitor- ing age (or other behaviours that parents may want to know about). It was impor- tant for participants to know where the data will be stored, who had access to it and what the information will be used for.

**Conclusion:** Young people have clear opinions as to what they like and don’t like with respect to wearable data collection devices. As well as personal preferences, age specific considerations were highlighted by the young people. It is therefore imperative not only to involve young people as research participants but also to involve them at early stages of research including trial design to ensure accept- ability of data collection methods including the design of any devices proposed.

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**Background:** Different forms of chronic arthritis such as rheumatoid arthritis (RA) or spondyloarthritides show a typical pattern of joint involvement. However, mecha- nisms involved in this patterning remain unknown. Synovial fibroblasts (SF) iso- lated from different joint regions, differ in their epigenetic landscape, their gene expression and their function. The long non-coding RNA HOTAIR, which is an important regulator of the epigenetic landscape, was found to be exclusively expressed in joints of the lower extremity.

**Objectives:** We aim to clarify the role of HOTAIR in SF.

**Methods:** HOTAIR was silenced in SF isolated from patients with osteoar- thritis (OA) by HOTAIR GapmeR using Lipofectamine, and changes in gene expression were measured by next generation RNA sequencing (Illumina Nova- Seq 6000) after 48h (n=3). Pathway analysis was performed using STRING protein- network, and regulated genes were confirmed by real-time PCR in SF silenced for HOTAIR from OA and RA-patients (n=8) and compared with control SF transfected with non-silencing LNA GapmeR negative control. The time course of targeted genes was studied with and without cycloheximide (10μg/ml 6h and 24h) (n=2). To assess the effect of HOTAIR silencing on the canonical Wnt pathway, we employed the TOP/FOP reporter system using the dual-luciferase kit (n=3).

**Results:** STRING analysis identified among others three significantly enriched pathways, namely FGF, BMP and Wnt, including 19 genes differentially regulated from different joint regions, differ in their epigenetic landscape, their gene expression and their function. The long non-coding RNA HOTAIR, which is an important regulator of the epigenetic landscape, was found to be exclusively expressed in joints of the lower extremity.

**Conclusion:** STRING analysis identified among others three significantly enriched pathways, namely FGF, BMP and Wnt, including 19 genes differentially expressed between SF silenced for HOTAIR and controls according to p-value (<0.05) and log ratio (>2.5 or <−2.5). Real-time PCR confirmed six genes: FGFR2 (5 ± 0.1-fold downregulated; p=0.01), FGFR7 (1.9± 0.4-fold downregulated; p=0.02), BMP2 (1.7± 0.5-fold upregulated; p<0.01), LGR5 (3.4±0.3-fold downregulated; p=0.02), CTNNB1 (beta-catenin) (1.5±0.5-fold upregulated; p=0.01) and GSK3β (1.8± 0.2-fold downregulated; p=0.03). There was a trend for LRPPC (p=0.06). HOTAIR expression and FGFR2 and FGFR7 expression correlated (r=0.67 and 0.55; p<0.01) as well as HOTAIR and BMP2 (r=0.45; p=0.05). Time course of gene expression peaked after 30-48 hours. Adjunction of cycloheximide, block- ing translation, did not change gene expression of BMP2 and CTNNB1 in SF silenced for HOTAIR, suggesting a direct effect of HOTAIR on these genes. FGFR2, FGFR7, LGR5, LRPS and GSK3β expression were normalized with cyclo- heximidine indicating the need of a protein to mediate HOTAIR effect on FGFR2 pathway and on Wnt pathway. Topflash assay confirmed the role of HOTAIR in regulation of Wnt pathway by 1.7± 0.2-fold decrease in Wnt activation following HOTAIR silencing (p=0.03). Stimulation by TGF-α led to a 2.1± 0.3 decrease in HOTAIR expression (p=0.0001). Following TGF-α stimulation, FGFR2 and LGR5 expression decreased (p<0.0001 and 0.0004, respectively), whereas there was an increase in BMP2 expression (p<0.0001), consistent with the effect of silencing HOTAIR on these genes. There was a decrease in HOTAIR expression following LPS (p<0.006), and poly I/C (p=0.003). HOTAIR and TGF-α were inversely corre- lated in the synovium of RA patient (r=−0.79; p<0.05).

**Conclusion:** Our study highlights three main pathways regulated by HOTAIR and involved in joint patterning: FGFR2/FGFR7, BMP2 and LRPS/LGR5/GSK3β/