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## **Beautiful VR setting could reduce pain in unpleasant medical procedure**

Being immersed in a stunning 'virtual' Icelandic landscape can reduce the pain caused by uncomfortable medical procedures, new research has found.

The study compared patients with and without virtual reality (VR) headsets having rigid cystoscopies, where a rigid telescope is inserted through the urethra into the bladder. The research is being presented today at the European Association of Urology congress, EAU21.

Diagnosing and treating bladder cancer usually requires checking the bladder through a cystoscopy, which is perceived by patients as unpleasant and painful. Some patients avoid follow-up and as a result suffer uncontrolled and irreversible development of the disease. It is possible to have a flexible cystoscopy, which is less painful, but certain treatments can only be done with a rigid cystoscopy. Rigid cystoscopy may be performed under local anaesthesia. It can also be performed under both general and spinal anaesthetic, but those procedures bring additional risk of complications.

In some fields of medicine, VR has been shown to be an effective pain relief tool; for example, in burns patients while dressings are changed. In these applications patients have tended to be upright and the VR experience interactive.

Dr Wojciech Krajewski and colleagues at the Wrocław Medical University in Poland recruited 103 patients, with a mean age of 66 years, who were listed for rigid cystoscopy with just local, intraurethral anaesthesia. Some were for a first diagnosis and others required follow up having experienced the procedure in the past. Individuals were randomised to undergo classic cystoscopy or the procedure with VR goggles and headphones presenting an image of the Skógafoss waterfall in Iceland.

Patients were asked about their level of fear and completed a questionnaire on anxiety and depression before the procedure. During the cystoscopy, the team measured blood pressure, oxygen saturation and heart rate in patients, as well as taking pain-related observations using a measurement score called FLACC - observing face, legs, consolability and cry - which is used in children but here adjusted for adults. After the procedure, patients were also asked to rate the pain perception and nausea related with the cystoscopy.

The pain scale scores were lower in the VR group than the controls, and though nausea and vertigo were higher with the headsets and goggles, patients found it bearable and no procedures had to stop as a result.

Blood pressure and heart rate increased in all patients during the procedure, but less so in the VR group. Oxygen saturation remained stable but these measurements are less reliable because masks were introduced during the trial when the COVID-19 pandemic began.

The findings were the same for male, female, first and follow-up cystoscopies, and the researchers believe the technology could be used for other uncomfortable or painful procedures to help reduce patient pain.

Dr Krajewski says: “Cystoscopy is uncomfortable for patients and they can be anxious about it. My colleagues and I were keen to find new ways to make them more comfortable and had seen VR technology used for younger patients to alleviate pain in interactive ways. In this instance we wanted to try presenting a calming image, more suited to older patients, and see if we could better support them during their procedures.”

“Patients reported less pain, and this was also reflected in our observations of their experience. VR is certainly an option for pain reduction in cystoscopies and we are looking into whether it will have the same effect in other medical interventions such as lithotripsy to break down kidney stones or prostate biopsy.”

Professor James N'Dow, from the University of Aberdeen, who chairs the EAU Guidelines Office, says: “Improving patients’ experience of the care they receive is as important as improving treatment outcomes. While it makes sense to avoid general anaesthesia whenever possible, telescopic bladder examinations under local anaesthetic can be very uncomfortable and frightening for some patients. This study increases our understanding of how virtual reality can distract patients and reduce their anxiety and pain. What’s needed now is a larger trial, which would also do a cost-benefit analysis, to determine whether this approach should be considered as part of standard clinical practice.”

## **Ends**

### **For more information:**

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### **Notes to editors:**

### **About EAU21**

Europe’s biggest urology congress will take place from 8th-12th July 2021 in a virtual setting. With over 1,500 abstracts presented and moderated live, the [Annual Congress of the European Association of Urology](#) (EAU21) will be amongst Europe’s biggest medical congresses in 2021.

Clinicians, scientists, and patients will meet to discuss topics such as:

- Prostate cancer: new developments to improve treatments of the most common male cancer
- Urinary incontinence: a growing concern for the elderly population
- Practice changing treatments for both bladder and kidney cancer

- Prevention and treatment of urinary stones; 1 in 10 people (55 million adults in Europe) will form a stone at some point
- Special track for representatives of patient advocacy group on Friday 9 July

...and many other conditions related to the male and female urinary tract system and male reproductive organs. Review the full scientific programme on the [congress website](#).