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Using immobilisation masks in Magnetic Resonance Imaging radiotherapy planning scans: The experiences of male patients with head and neck cancers

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Background

Modern radiation therapies for head and neck cancer (HNC) require precisely delineated target areas in order to deliver high tumour doses whilst sparing surrounding healthy tissue and functional anatomy. In the service of this, the facility of MRI is axiomatic. A key consequence of the acute sensitivity of MRI, however, is a necessity that the patient's upper body remain motionless during the period required to complete a HNC radiotherapy planning scan using this modality. General difficulty with maintaining stillness during MRI scans is, however, a widely documented problem in in medical imaging research, often linked to the feelings of discomfort and anxiety reported by many adult patients (Godenschweger et al., 2016). Given this convergence of clinical requirements, immobilisation devices are routinely used during MRI-based HNC planning scans. Typically, a thermoplastic shell is moulded to the facial contour of the individual. This device "locks" the patient's upper body in place during planning to restrict movement, and is then used to ensure patient position is replicated precisely during each stage of treatment (see Figure 1). While compelling contemporary evidence has detailed the technical efficacy of using immobilisation masks in this clinical context (Mandija et al., 2019a; 2019b), robust research literature addressing patient experience thereof remains minimal.



Figure 1: A patient wearing a thermoplastic immobilisation mask

Methods

Given that patient experience of immobilisation masks in HNC-related radiotherapy scans was the key focus of the study, a qualitative-interpretative approach was adopted. **Participants:** N=10 potential participants, drawn from a worklist of individuals directly after their pre-MRI appointment, were approached by means of a convenience sample. Of these, N=8 participated, of which all were male with an age range of 50 to 60 years (inclusive). **Procedure:** Extended, semi-structured interviews were conducted face to face, by the first author. Each interview was digitally audio recorded, and transcribed in full. **Analysis:** Transcripts were analysed in line with the six-step reflexive thematic approach advocated by Braun and Clarke (2006): familiarisation with data; generation of initial codes; searching for themes; reviewing identified themes; defining/redefining and naming themes; and writing up the resultant report.

Results

Both authors reviewed the collected data in full, through all key analytic steps, concluding that the final version of analysis should ultimately represent a three-stage chronological/procedural experience model, reflecting a sense-making procedure that demonstrably preoccupied the participants themselves. The themes and their relationship with key subthemes are schematised in Figure 2.

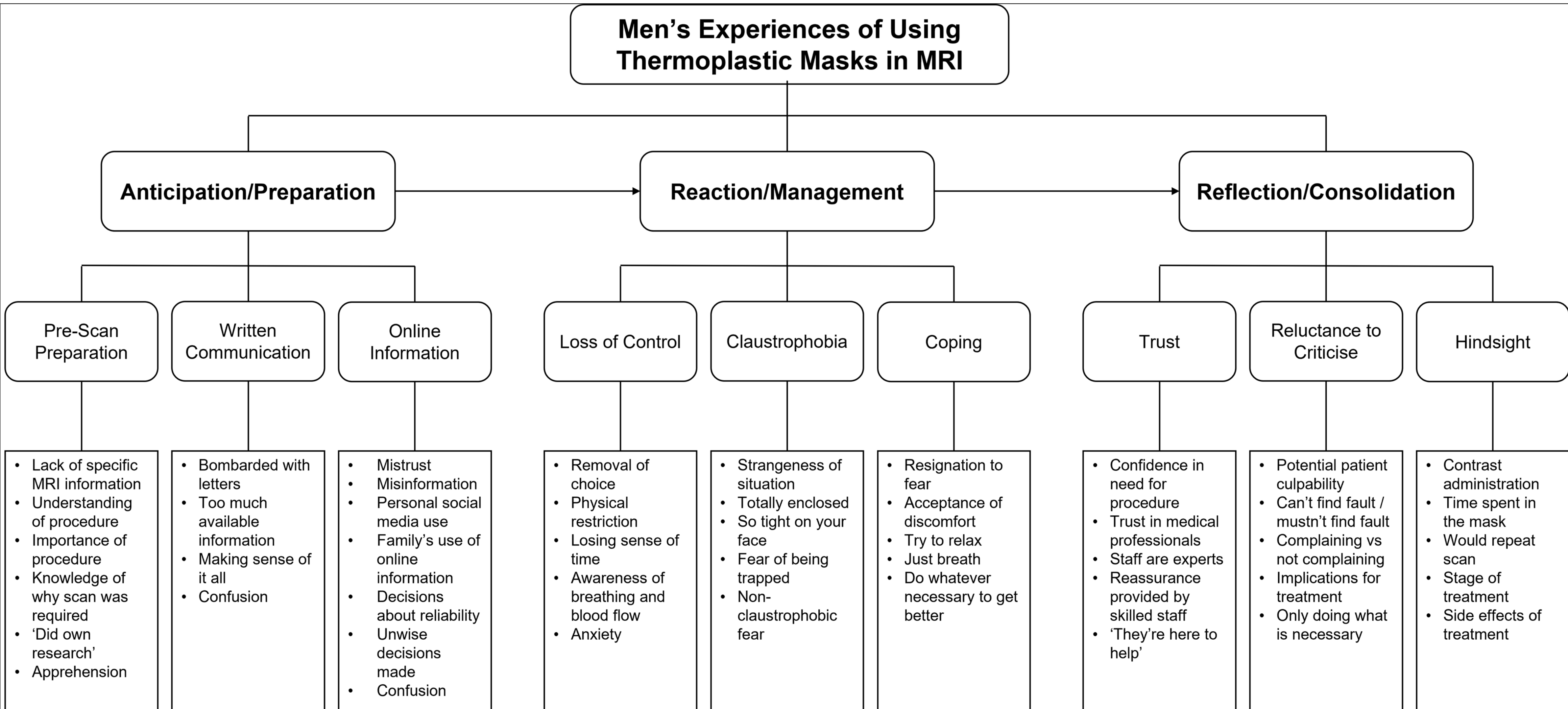


Figure 2: Thematic map of the collected data

Key Direct Evidence

"I was given lots of leaflets, at first you're being bombarded, you know...And it's trying to grasp and understand the situation...I didn't know what was coming...and it was trying to understand and break it down so I could understand it."

"Well, I looked it up on YouTube, the treatment plan for when you have radiotherapy in the neck area and I know that you will have an immobilisation mask fitted to you to concentrate the radiotherapy in the right area."

"But then I thought, no, this has to be done. If they unclip us then they'll only have to clip me back up again, because this has to be done. So, I closed my eyes and I just concentrated on my breathing. That's all I had to do, just breathe."

"They were flexible and very attentive. I think that they want to look after you. It's quite a traumatic time in your life...and they are quite calm, so I felt relaxed and confident."

Conclusions

The study, by situating the patients' experiences within their broader lives and treatment, highlighted of some novel issues alongside some that might have been more reasonably expected. Not least among the latter was the role of social media, read not only by the patient but by others around them, in generating uncertainty around what was 'reliable' and useful pre-procedural information at all. Ultimately, however, all participants in this study were able to tolerate the MRI due to confidence in skilled staff and endured any discomfort as a means of achieving the goal of becoming cancer-free.

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Ethics: The design and conduct of this research was fully approved by The Newcastle upon Tyne Hospitals NHS Foundation Trust. **Contact:** louise.jordan13@nhs.net

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