The UK FSHD Patient Registry: A Key Tool Linking Patients with National and International Research Projects

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Background

- The UK FSHD Patient Registry is a patient self-enrolling online database, collecting clinical and genetic information about FSHD type 1 (FSHD1) and FSHD type 2 (FSHD2).
- Established in May 2013.
- Supported by Muscular Dystrophy UK (MDUK), affiliated to the TREAT-NMD Alliance (www.treat-nmd.org) and coordinated by the John Walton Muscular Dystrophy Research Centre at Newcastle University.
- The registry's primary aim is to facilitate and accelerate clinical research in FSHD.
- The registry also aims to better characterise and understand FSHD, share information on standards of care, and disseminate information relating to upcoming academic and non-clinical studies in FSHD.

Method

- The registry is used to capture longitudinal, self-reported data through an online portal available to patients and specialist clinicians.
- Patient reported outcomes are entered into a secure portal, combined with clinician verified genetic details. Patients are reminded to update their information annually.
- The dataset collected within the registry includes all mandatory and highly encouraged items agreed at the 171st ENMC International Workshop[1]. This includes **patient reported data items** such as, clinical diagnosis, wheelchair use, weakness, current best motor function, and **doctor reported items** such as genetic confirmation.
- The registry also captures the **McGill Pain Questionnaire**, an **FSHD Pain Questionnaire**, **the Short Form 36 Health Survey Questionnaire (SF-36)**, the **Individualized Neuromuscular Quality of Life Questionnaire**, and a **Scapular Fixation Questionnaire**.
- The registry can support researchers and industry on various projects by facilitating study/survey recruitment or by providing de-identified patient data.

Results

As of May 2022, there are 917 active UK based participants enrolled on the UK FSHD Patient Registry. This includes 467 male and 450 female participants (a 51/49% split), both with an average age of 51 years (overall range of 5 – 87 years).

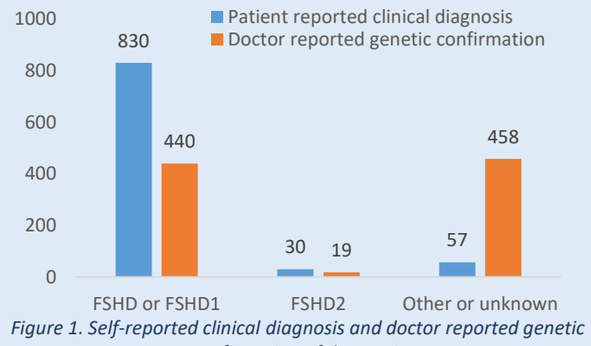


Figure 1. Self-reported clinical diagnosis and doctor reported genetic confirmation of diagnosis

Sixty percent of patients reported a **positive family history** of FSHD. The most common self-reported **clinical diagnosis** is FSHD/FSHD1 (91%) followed by other/unknown (6%) and FSHD2 (3%).

Doctors have provided **genetic confirmation** for 53% of FSHD/FSHD1 patients, and 63% of FSHD2 patients (**Figure 1**). Efforts are ongoing to increase the number of genetic confirmations in the registry.

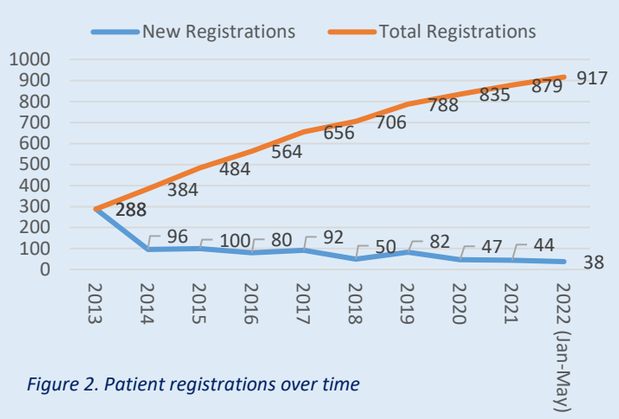


Figure 2. Patient registrations over time

After the initial 288 patients who joined in the first year, the UK FSHD Registry has welcomed an average of **74 new patients each year since** 2014. This is approximately **6 new patients every month,** however the rate has recently increased to an average of 8 new patients in the first few months of 2022.

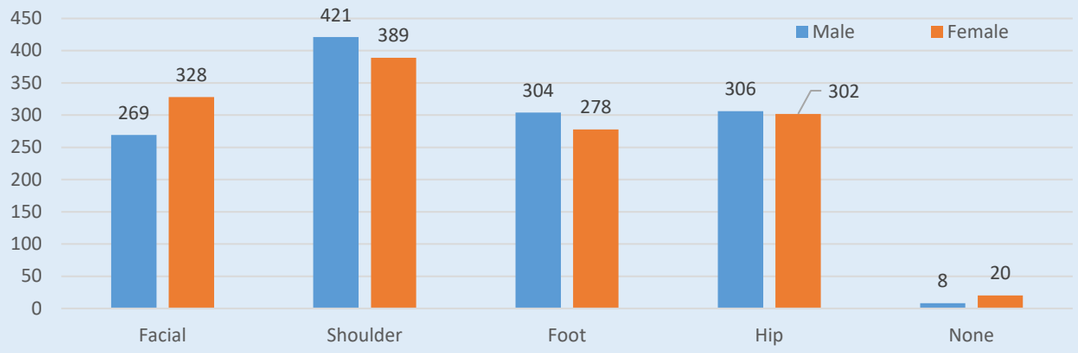


Figure 3. Self-reported weakness

The majority of patients (88%) reported **weakness** in the shoulder (male – 90%, female – 86%), with considerably more females than males reporting facial weakness (73% to 58%) Only 3% of all patients reported no symptoms (male – 2%, female – 4%). This question has a high level of completion by registry participants, with 96% of all patients reporting their symptoms (**Figure 3**).

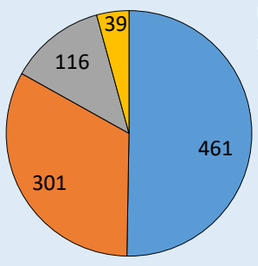


Figure 5. Self-reported current best motor function

Most patients reported their **current best motor function** as either ambulatory (50%) or ambulatory-assisted (33%). A small number of patients reported being non-ambulatory (13%) or did not answer (4%) (**Figure 5**).

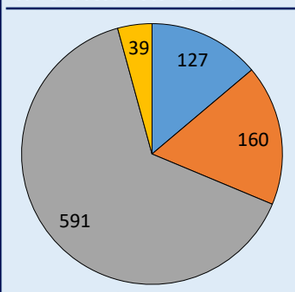


Figure 6. Self-reported wheelchair use

The majority of patients do not require **wheelchair use**, however 17% report part-time use and 14% report full-time use (**Figure 6**).

Non-invasive ventilation was reported by 6.3% of patients (full time – 0.4%, part-time – 5.9%), whilst 1.3% of patients report using invasive ventilation (full time – 0.2%, part-time – 1.1%). The vast majority of patients reported no invasive (93%) or non-invasive ventilation (89%).

Retinal vascular disease was reported by only 1% of patients, with 84% reporting no retinal issues.

Hearing loss was reported by 16% of patients with 69% reporting no hearing issues

Scapular fixation surgery was reported by 8% of patients (bilateral – 5%, unilateral – 3%). 87% of patients reported they have had no scapular fixation surgery

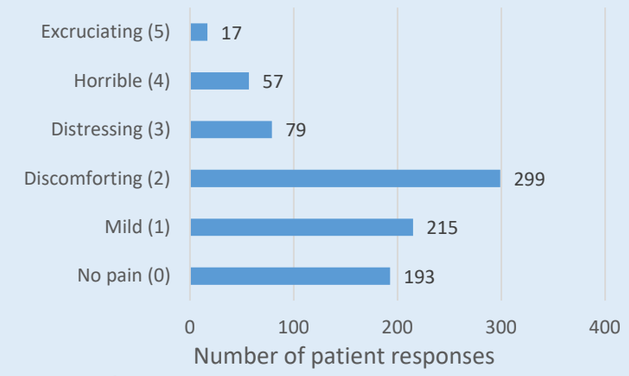


Figure 7. Self-reported current pain intensity using the FSHD Pain Questionnaire captured by the registry

Pain

The FSHD Pain Questionnaire is a universal pain assessment tool developed for the registry which requires further validation.

Thirty three percent of patients who completed this reported their current pain intensity as discomforting, with a further 23% reporting mild pain and 21% reporting no pain. Fewer patients reported their current pain as distressing (9%), horrible (6%) or excruciating (2%) **(Figure 7)**.

Patients who completed the questionnaire reported either mild or no pain in their hands (79%), feet (77%), hips (64%), arms (60%) and legs (58%) in the past 7 days. Pain was reported as discomforting most frequently in the shoulders (29%) and lower back (25%) with similar reporting of mild pain or no pain in these areas too. Distressing pain was most frequently reported in the lower back (14%), and shoulders and legs (both 10%). The shoulders and lower back (both 13%) were the most common locations for pain reported as horrible or excruciating **(Figure 8).**

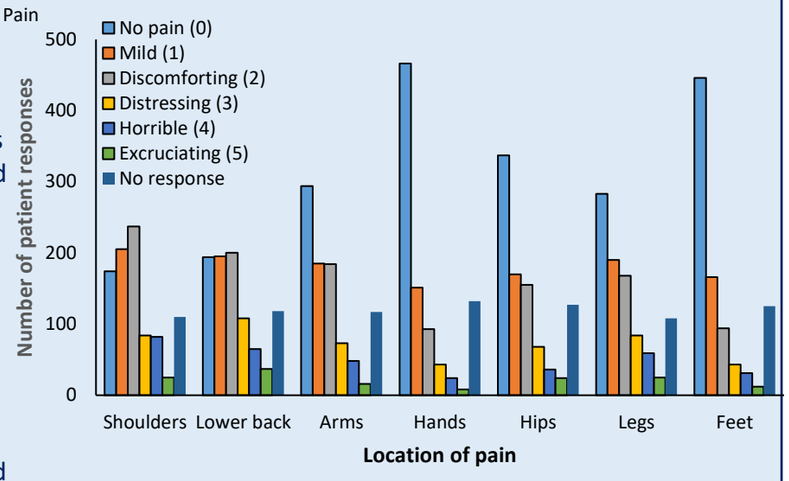


Figure 8. Self-reported level of pain in the past 7 days and its location using FSHD Pain Questionnaire captured by the registry

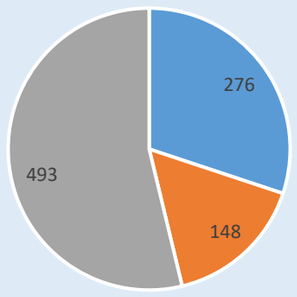


Figure 9. Self-reported medication use for more than one week, to treat pain in the past five years

Medication

The majority of patients use common non-steroidal anti-inflammatory drugs and analgesics to treat their pain. Fewer patients tend to report stronger opioid use such as tramadol (3%) and morphine (1%). Over 40 different drugs comprise the 6% of patients who reported using **other** less common drugs to treat their pain (**Figure 10**).

Forty-six percent of registered participants responded to the medication use question. Of these, 65% used over the counter or prescription medications for more than one week in the last five years to help deal with persistent pain (**Figure 9**), and 35% reported no current medication use.

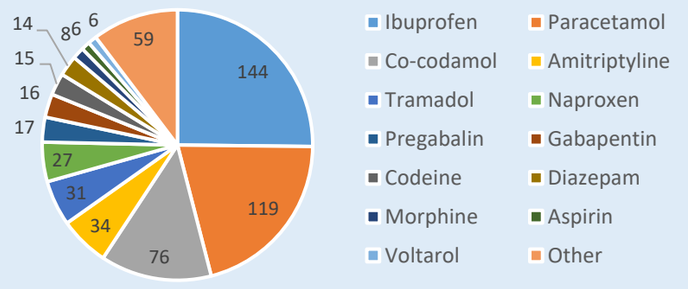
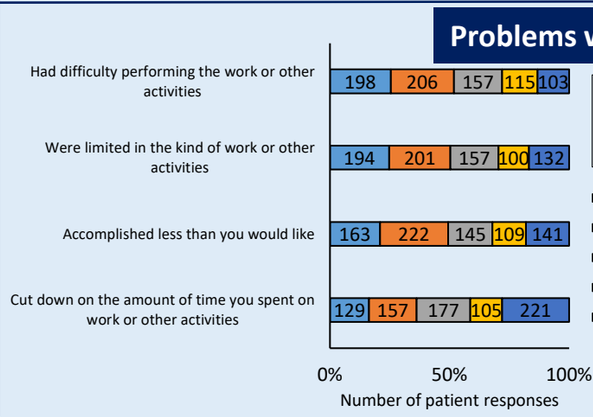


Figure 10. Self-reported medication used to treat pain

Problems with work or daily activities



The same key is used for both figures

- None of the time (1)
- A little of the time (2)
- Some of the time (3)
- Most of the time (4)
- All of the time (5)

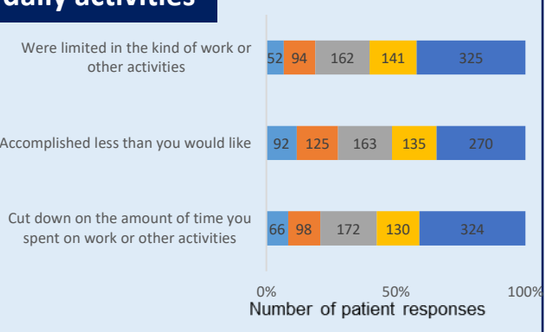


Figure 12. Self-reported problems with work or other regular daily activities as a result of any **emotional** problems, measured using the SF-36.

Figure 11. Self-reported problems with work or other regular daily activities as a result of current **physical** health, measured using the SF-36.

Patients most frequently reported their **physical** health causing them to cut down the amount of time spent on work or other activities, all of the time (24%). Physical health also caused patients to have difficulty with performing work/other activities (24%), limited their work/activities (22%) and accomplishing less than they would like (24%), a little of the time (**Figure 11**).

Patients most frequently reported **emotional** problems (such as anxiety and depression) causing them to cut down the amount of time spent on work or other activities, all of the time (35%). A similar impact was reported on patients accomplishing less than they would like, all of the time (29%) and being limited in work or other activities, all of the time (35%) (**Figure 12**).

Registry utilisation in research

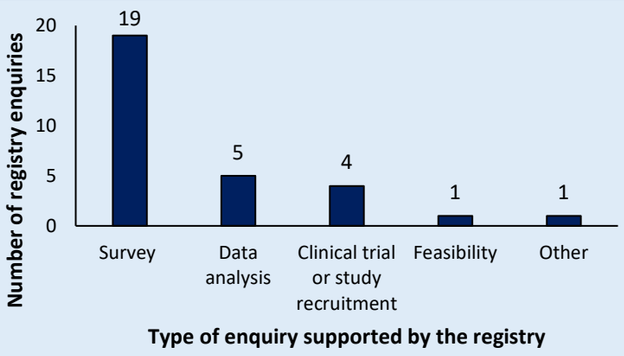


Figure 13. The type and number of registry enquiries supported since 2013

To date the registry has supported **30** enquiries from industry, academics, clinicians and patient organisations. Most registry enquiries have involved online survey distribution (63%) supporting data analysis (17%), or clinical trial and research study recruitment (13%) **(Figure 13).** Since 2020, the registry has supported 13 surveys.

For transparency and to highlight the versatility of the registry, enquiries that the registry has supported are now documented on the registry website.

From the available data of 10 studies supported by the registry, registry recruitment has ranged from **4%-100%,** with a mean recruitment of **42%.**

The registry has also been involved in **16** publications most of which include studies where the registry has supported recruitment.

These are also now documented on the registry website and are routinely updated.

Conclusion

The UK FSHD Patient Registry continues to be a versatile, cost-effective research tool that has helped facilitate a range of studies and advance FSHD research around the world. Additional work continues to be done to improve engagement with more doctors in the UK and the reporting of genetic information on the registry. There are also future data linkage plans between the registry and the Newcastle Research Biobank for Rare and Neuromuscular Diseases. As well as supporting research projects, the registry continues to develop new and engaging communication materials for the FSHD community and plans to further capture the patient voice in the development of new materials.

References

[1] Tawil, R., van der Maarel, S., Padberg, G.W. and van Engelen, B.G. (2010). 171st ENMC international workshop: standards of care and management of facioscapulohumeral muscular dystrophy. Neuromuscular Disorders, 20(7), pp.471-475

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