The epidemiology of Fragile X syndrome in the United Kingdom.

EPH32

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Background

- Fragile X Syndrome (FXS) is a genetic condition that is associated with intellectual disability, with males more severely affected than females (1,2).
- FXS is associated with behavioural characteristics such as autism-like behaviour, hyperactivity, mood disorders and poor eye contact (2).
- The general estimated prevalence of FXS globally is 1.4/10,000 men and 0.9/10,000 women (3).
- The rationale behind this study centres around a lack of up to date, UK-specific studies using real-world data to evaluate the epidemiology of FXS.

Methods

- Patients were selected from the Clinical Practice Research Datalink (CPRD) Aurum dataset linked to Hospital Episode Statistics (HES).
- CPRD Aurum is derived from primary care practices in England and captures approximately 20% of the England population.
- Patients with FXS were selected by either medcodes (Aurum) or ICD-10 codes (HES) (Table 1).
- FXS patients were required to be registered at an Aurum practice and have a diagnosis before 1st January 2019.
- Point prevalence of FXS was estimated for 1st of January 2019.
- Patients with FXS were matched 1:1 to non-FXS control patients on age, gender and concurrent practice registration.
- Co-occurring conditions (attention deficit hyperactivity disorder (ADD/ADHD), anxiety, autism, depression, gastrointestinal problems, height impairment, mitral valve prolapse, otitis media, seizures, obstructive sleep apnoea, sleep disorders, strabismus, tic disorder and toileting problems) recorded prior to 1st January 2019 were compared between cases and controls.

Table 1. The medical codes used to select patients with FXS.

Description	Clinical code	Type
Fragile X Syndrome	2090010, 893501000006110, 940371000006118	Medcode
Fragile X Chromosome	315486012	Medcode
Cause of learning disability: Fragile X Syndrome	1009571000006115	Medcode
FRAXA – Fragile X Syndrome	2508311000006110	Medcode
Martin-Bell Syndrome	2508291000006111	Medcode
Fragile X Chromosome	Q99.2	ICD-10

Results

- 1,520 FXS patients were selected and matched to 1,520 control patients.
- The mean age was 32 years and 65% were male.
- The point prevalence was 1.15 per 10,000 population.

Table 2. The point prevalence for the Fragile X population in the year 2019.

Population	Cases	Prevalence per 10,000 (95% CI)
13,259,727	1,520	1.15 (1.09-1.21)

Conclusion

- The estimated prevalence of FXS derived from routine primary care data is comparable to that derived from published estimates.
- Patients with FXS had a significantly greater number of co-occurring conditions than controls, though due to the nature of some of the conditions studied the absolute prevalence may have been underestimated.
- One limitation of the study is the possible underestimation of the prevalence of FXS. With genetic testing more commonly undertaken now we expect that this figure may represent an underestimate, especially in older adults who are less likely to have been tested in childhood.
- The FXS population had a significantly higher number of co-occurring conditions than the control population, most notably for autism, seizures and ADD/ADHD (Table 3).

Table 3. Co-occurring conditions diagnosed prior to 1st January 2019 for patients with Fragile X and matched controls.

Co-occurring Conditions	FXS, N (%)	Control, N (%)	p-value
ADD/ADHD	145 (9.5%)	24 (1.6%)	<0.001
Anxiety	269 (18%)	184 (12%)	<0.001
Autism	332 (22%)	29 (1.9%)	<0.001
Depression	117 (7.7%)	84 (5.5%)	0.016
Gastrointestinal Problems	582 (38%)	409 (27%)	<0.001
Height Impairment	46 (3%)	17 (1.1%)	<0.001
Mitral Valve Prolapse	<5	<5	0.6
Otitis Media	283 (19%)	257 (17%)	0.2
Seizures	198 (13%)	39 (2.6%)	<0.001
Sleep apnoea	26 (1.7%)	8 (0.5%)	0.002
Sleep disorders	81 (5.3%)	59 (3.9%)	0.057
Strabismus	14 (0.9%)	<5	0.007
Tic disorder	20 (1.3%)	16 (1.1%)	0.5
Toileting problems	20 (1.3%)	<5	<0.001

References

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