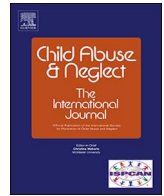




Contents lists available at ScienceDirect

Child Abuse & Neglect

journal homepage: www.elsevier.com/locate/chiabuneg

Invited Review

The perpetrators of medical child abuse (Munchausen Syndrome by Proxy) – A systematic review of 796 cases

Gregory Yates^{a,*}, Christopher Bass^b^a Department of Psychology, Institute of Psychiatry, Psychology and Neuroscience, King's College London, London SE5 8AF, United Kingdom^b Department of Psychological Medicine, John Radcliffe Hospital, Oxford OX3 9DU, United Kingdom

ARTICLE INFO

Keywords:

Medical child abuse
 Munchausen Syndrome by Proxy
 Factitious disorder
 Paediatric condition falsification
 Fabricated and induced illness
 Malingering by proxy

ABSTRACT

Introduction: Little is known about the perpetrators of medical child abuse (MCA) which is often described as “Munchausen’s syndrome by proxy” or “factitious disorder imposed on another”. The demographic and clinical characteristics of these abusers have yet to be described in a sufficiently large sample. We aimed to address this issue through a systematic review of case reports and series in the professional literature.

Method: A systematic search for case reports and series published since 1965 was undertaken using MEDLINE, Web of Science and EMBASE. 4100 database records were screened. A supplementary search was then conducted using GoogleScholar and reference lists of eligible studies. Our search yielded a total sample of 796 perpetrators: 309 from case reports and 487 from case series. Information extracted included demographic and clinical characteristics, in addition to methods of abuse and case outcomes.

Results: Nearly all abusers were female (97.6%) and the victim’s mother (95.6%). Most were married (75.8%). Mean caretaker age at the child’s presentation was 27.6 years. Perpetrators were frequently reported to be in healthcare-related professions (45.6%), to have had obstetric complications (23.5%), or to have histories of childhood maltreatment (30%). The most common psychiatric diagnoses recorded were factitious disorder imposed on self (30.9%), personality disorder (18.6%), and depression (14.2%).

Conclusions: From the largest analysis of MCA perpetrators to date, we provide several clinical recommendations. In particular, we urge clinicians to consider mothers with a personal history of childhood maltreatment, obstetric complications, and/or factitious disorder at heightened risk for MCA. Longitudinal studies are required to establish the true prognostic value of these factors as our method may have been vulnerable to publication bias.

1. Introduction

Medical child abuse (MCA) is a variant of child maltreatment in which the victim is subjected to ‘unnecessary and harmful or potentially harmful medical care at the instigation of a caretaker’ (Roesler & Jenny, 2008, p. 1). Perpetrators of MCA exaggerate, falsify, simulate, or actively induce illness in children to convince pediatricians that medical attention is warranted. In these cases, ‘detailed medical history from the parents, which is the physician’s most valuable tool in diagnosis for most illnesses, is rendered invalid’ (Hall, Eubanks, Meyyazhagan, Kenney, & Johnson, 2000, p. 1311).

Published accounts of MCA show that virtually any pediatric illness can be fabricated (Roesler, 2015) and that the same apparent

* Corresponding author.

E-mail addresses: g.peter.yates@gmail.com (G. Yates), christopher.bass@oxfordhealth.nhs.uk (C. Bass).<http://dx.doi.org/10.1016/j.chiabu.2017.07.008>

Received 2 May 2017; Received in revised form 30 June 2017; Accepted 14 July 2017

Available online 24 July 2017

0145-2134/ © 2017 Published by Elsevier Ltd.

illness can be presented in different ways. For example, epilepsy may be misdiagnosed if caregiver lies about the child having seizures (Doughty, Rood, Patel, Thackeray, & Brink, 2016) or poisons them with a drug that causes seizures, such as alimemazine (Gomila et al., 2016). Renal disease may be simulated through surreptitious addition of blood to the child's urine samples (Tsai et al., 2012) – or urine to their blood samples (Mantan, Dhingra, Gupta, & Sethi, 2015).

Pediatricians should not take into account the apparent intentions of the caregiver when there are clinical grounds to suspect MCA. Nor should they rule out the possibility of MCA on the basis of the caregiver's psychiatric history. MCA is no different in principle to any other form of child cruelty. Stirling (2007) provides a helpful comparison:

'A mother might violently physically assault her infant because she is fed up with the child crying, she is intoxicated or drugged, or she earnestly thinks that is the way to get the infant to behave and start eating, but it is still called physical child abuse.' (p. 1028)

Confusion arises because cases of MCA have traditionally been described in terms of perpetrator psychology. Often, these terms designate mental disorders *imposed on another* or experienced *by proxy*. The most famous example is 'Munchausen Syndrome by Proxy (MSBP)', which was first used by the British pediatrician Roy Meadow in 1977 (Meadow, 1977). MSBP occurs when a caregiver fabricates illness in a child to satisfy their own desire for sympathy and attention. More recently, MSBP has been replaced with the term 'Factitious Disorder Imposed on Another (FDIOA)' (American Psychiatric Association, 2013). Authors have used 'Bulimia by Proxy' (Feldman, Christopher, & Opheim, 1989) and 'Anorexia by Proxy' (Scourfield, 1995) to describe caregivers who pressure (or coerce) children into conforming to their disordered eating behaviors. 'Hypochondria by Proxy' does not generally involve deception, but rather pathological *anxiety* about a child's health that is nevertheless associated with the "doctor-shopping" seen in MSBP/FDIOA (Bools, Neale, & Meadow, 1994; Moreira & Moreira, 1998). In similar cases known to the authors, parents with Asperger's syndrome have become morbidly preoccupied with the possibility of a rare, overlooked disease in their child (Bass and Glaser, 2014).

However, in many cases of MCA, there is no evidence that the perpetrator has a psychiatric disorder. Some caregivers fabricate illness in their children purely for financial gain, as can be seen in published reports of 'Malingering by Proxy' (Amlani, Grewal, & Feldman, 2016). While the perpetrators of MCA 'usually ha[ve] no intention of killing or maiming the child' (Sigal, Gelpkopf, & Levertov, 1990, p. 740) their actions may put children at risk of death or long-term disability. Sheridan (2003) reviewed 451 published accounts of MCA, noting a fatal outcome in 27 cases (6%) and prolonged or permanent disability in 33 (7.3%). It has been hypothesized that 10% of sudden infant deaths (SIDS) are due to deliberate suffocation by a caregiver (Craft & Hall, 2004) which may be a manifestation of MCA (Bass, Acosta, Adshead, & Byrne, 2014). Emotional problems have been reported by survivors of the abuse, including post-traumatic stress symptoms (Bools, Neale, & Meadow, 1993; Libow, 1995). Unwarranted investigations and treatments can lead to iatrogenic complications in these cases (Bass et al., 2014) – as can "heroic" interventions undertaken on a false pretext. Surgeons have performed pancreatectomy (Giurgea et al., 2005) hemicolectomy (Malatack, Wiener, Gartner, Zitelli, & Brunetti, 1985), and limb amputation (Dershewitz, Vestal, Maclaren, & Cornblath, 1976) under pressure from caregivers.

MCA was once believed to be a rare form of abuse, but surveys administered to pediatricians in recent decades have shown prevalence rates that range from 0.002% to 0.27% (Denny, Grant, & Pinnock, 2001; Light & Sheridan, 1990; McClure et al., 1996). Studies conducted in specialist settings or inter-disciplinary settings return the highest estimates: 1%–13% (Ferrara et al., 2013; Godding & Kruth, 1991; Rahilly, 1991; Warner & Hathaway, 1984). MCA appears to be encountered more frequently by doctors who specialize in pediatric illnesses that are difficult to objectively rule out, such as food allergy (Warner and Hathaway, 1984) and asthma (Godding and Kruth, 1991). MCA is probably more common than many of the diagnoses routinely excluded by pediatricians before considering the possibility of abuse (Hall et al., 2000).

Although "gold-standard" tests for MCA do exist, such as the separation test (Bass et al., 2014) and covert video surveillance (Southall, Plunkett, Banks, Falkov, & Samuels, 1997) these tests are used in practice to *confirm* suspicions of abuse, which are typically aroused by the behavior of the child's caregiver. Psychiatrists working in hospital settings may therefore be required to estimate the risk of MCA purely on the basis of their assessment of the caregiver. Evidence is needed to guide this assessment and, potentially, to plan for intervention.

Unfortunately, little is known about the perpetrators of MCA (Bass & Jones, 2011; Rosenberg, 1987) because the professional literature is mostly concerned with their victims. Only three studies known to the authors have examined a large sample of perpetrators: two major case series (Bass & Jones, 2011; Bools et al., 1994) and Sheridan's (2003) literature review. Their findings would suggest that perpetrators of MCA are usually young (25–31.43 years), female (92–100%), married (43–79%), and the mother of the victim (76.5–100%). Many have been sexually or physically abused, (21.7%–79%). Personality disorders (8.6–75%), mood disorders (5.3–50%), and somatoform disorders (52%–72%) are common, as are features of 'Factitious Disorder Imposed on the Self (FDIOS)' (29.3–64%) which is a psychiatric disorder in which sufferers intentionally fabricate their own illness for psychological gratification (American Psychiatric Association, 2013; Yates and Feldman, 2016). Perpetrators may report employment or training in a healthcare profession (14.3–14.6%).

Individual case reports and smaller case series offer an additional source of information about the perpetrators of MCA (Rosenberg, 1987) if analyzed in aggregate via systematic literature review. This method can provide researchers with larger samples than might be expected from empirical studies, and has been used as such to profile victims of MCA (Sheridan, 2003) and patients with FDIOS (Yates & Feldman, 2016; Libow, 2000). No such review of perpetrators has been undertaken since Sheridan's (2003) analysis, which was limited to case studies of MSBP/FDIOA published before 1999, and extracted only minimal information. Accordingly, we conducted a systematic and up-to-date review of MCA cases in the professional literature, focusing for the first time exclusively on perpetrators.

2. Method

A systematic search was conducted for all case studies and series involving MCA, defined as ‘unnecessary and harmful or potentially harmful medical care at the instigation of a caretaker’ (Roesler & Jenny, 2008; p. 1). We aimed to include cases where MCA was described using other terms, such as “Munchausen Syndrome by Proxy” or “Paediatric Condition Falsification”. Chart reviews and larger case series were excluded if they did not also describe cases individually. We adopted a conservative methodology and excluded cases where MCA was only suspected.

2.1. Search strategy

A keyword search of literature published before January 2016 was conducted. Due to the authors’ language limitations and lack of access to translation services for this study; only publications in the English language were considered. MEDLINE; Web of Science; and EMBASE databases were searched using the following terms: “medical child abuse”; “fabricated illness”; “condition falsification”; Munchausen*; Münchhausen*; Factit*; Artefactua*; Artefacta*; Meadow’s; “induced illness”; “illness falsification”; “illness deception”. The formula used for our MEDLINE search is provided below as an example:

((((((((((Munchausen* [Title/Abstract]) OR Münchhausen* [Title/Abstract]) OR Factit* [Title/Abstract]) OR Artefactua* [Title/Abstract]) OR Artefacta* [Title/Abstract]) OR Meadow’s [Title/Abstract]) OR “induced illness” [Title/Abstract]) OR “fabricated illness” [Title/Abstract]) OR “illness falsification” [Title/Abstract]) OR “condition falsification” [Title/Abstract]) OR “medical child abuse” [Title/Abstract]) OR “illness deception” 4752 records were returned following exclusion of duplicate records, of which 4100 were retrieved for abstract review. 607 records were identified as potentially eligible, of which 519 were retrieved for full text review. After full text review, 303 articles were excluded because they: (1) did not describe a case of MCA, (2) described only a suspected case of MCA, (3) described a case of MCA that had been reported elsewhere, or (4) did not describe the perpetrator. After discussion between the authors, 9 cases were excluded because it was felt they described attempted homicide or a different form of child maltreatment.

We then screened the bibliography of each eligible article, in addition to the bibliographies of key review papers (e.g. Rosenberg, 1987; Sheridan, 2003) and the results of a GoogleScholar search utilizing terms identical to the keyword search. These supplementary search processes yielded a further 43 eligible articles.

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow chart for the search process is provided in Fig. 1.

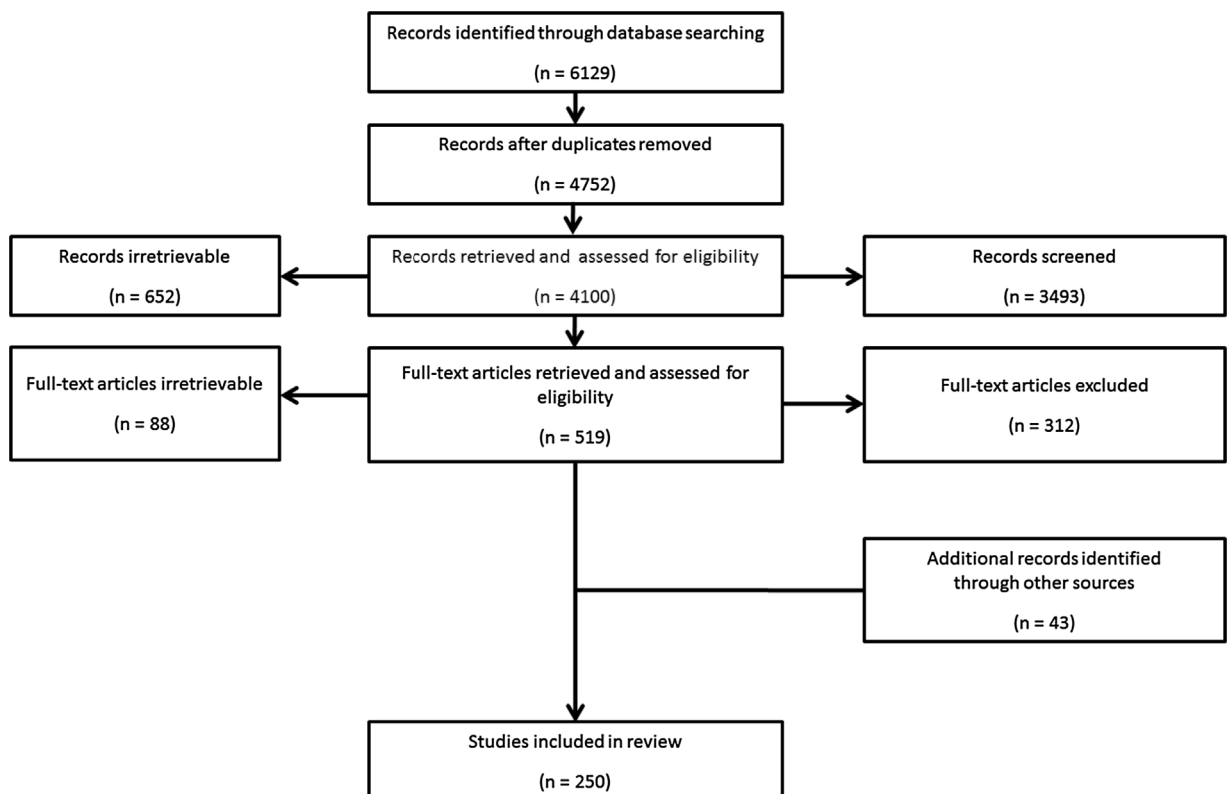


Fig. 1. PRISMA flow chart.

2.2. Data extraction

For each case we reviewed the description of the perpetrator for (1) demographic information, (2) clinical characteristics, and (3) method(s) of abuse. We also recorded relevant case outcomes. Data were entered into a database that we constructed using IBM SPSS 24.0 (SPSS, Inc., Chicago, IL, USA). For each variable specified below the percentage of relevant data found is indicated in parentheses:

- 1 **Demographic information:** We recorded the age (25.6%), gender (85.2%), marital status (27%), and occupation (36.7%) of perpetrators. We also noted their relation to the victim (99.7%).
- 2 **Clinical characteristics:** We noted current or historic psychopathology described by the author(s) after psychiatric assessment or chart review (60.2%) and recorded incidences of the following: substance/alcohol abuse, personality disorder, FDIOS, depression, somatization, self-harm/suicidality, pathological lying, “other”, and no psychopathology. Additionally, we recorded whether the perpetrator had a history of criminal behavior (54.5%), foster care (47%), childhood maltreatment (73.6%), relationship abuse (48.9%), or obstetric complications (49.1%) – such as miscarriage, preterm delivery, and birth injury.
- 3 **Method(s) of abuse:** We considered whether the author(s) had provided sufficient information to review the method(s) used by the perpetrator to fabricate illness in the child (72.5%). We then recorded whether perpetrators engaged in *fabrication by words*: for example, by exaggerating the child’s healthcare needs, lying about the child’s medical history, or falsely reporting the presence of illness in the child. We also recorded whether perpetrators engaged in *fabrication by hands*: either by interfering with medical investigations (*simulation*) or actually making the child ill (*induction*). We noted whether the fabrication continued if the victim was hospitalized (38.8%) and whether the victim colluded with the perpetrator (38.8%) – for example, by “acting out” symptoms even when the caregiver was absent.
- 4 **Case outcomes:** We recorded whether the perpetrator had gained financially from the abuse (6.9%), submitted the victim to extensive healthcare use (38.8%), or disrupted the victim’s school attendance (38.8%). Finally, we took note of cases in which the perpetrator caused the death of the victim (44.5%).

3. Results

A total sample of 796 perpetrators was extracted from case reports (N = 309) and case series (N = 487). The date of publication for included studies ranged from 1965 to 2016. A mean number of 4.8 new studies were published each year within this period, although considerable variation was found: 1977–86 (3.7/year), 1987–96 (8.7/year), 1997–2006 (8.2/year), and 2007–2016 (4.2/year).

Cases of MCA were described worldwide: 302 from the Americas (United States of America 283, Canada 4, Mexico 14, Chile 1), 434 from Europe (United Kingdom and Republic of Ireland 394, Germany 12, Italy 8, Former Yugoslavia 4, France 3, Finland 3, Denmark 2, The Netherlands 2, Sweden 1, Spain 1, Portugal 1, Poland 2, Belgium 1, Albania 1), 50 from Asia (Turkey 19, India 9, Oman 6, Israel 4, Sri Lanka 3, Saudi Arabia 2, Iran 2, Japan 1, Malaysia 1, Pakistan 1, Taiwan 1, Hong Kong 1), 6 from Australia, and 3 from New Zealand.

A summary of results for *demographic information* on perpetrators may be found on [Table 1](#), and *clinical characteristics* on [Table 2](#). Results for *method(s) of abuse* and *case outcomes* are summarized on [Table 3](#). All tables contain a comparison of findings between case reports and case series for each variable.

The sample size for the findings presented below varied according to the data available in cases, and is indicated in parentheses. The findings below were generated by combining case report and case series data when data from both sources were available.

Table 1
Demographic characteristics of MCA perpetrators.

Variable.	Case reports		Case series		Combined	
	N	%	N	%	N	%
Gender						
Female	296/306	96.7	366/372	98.3	662/678	97.6
Male	10/306	3.3	6/372	1.6	16/678	2.4
Relation to victim						
Mother	281/308	91.2	367/370	99.2	648/678	95.58
Father	9/308	2.9	3/370	0.8	12/678	1.77
Other	18/308	5.8	0/370	0	18/678	2.65
Marital status						
Married	89/126	70.6	74/89	83.1	163/215	75.8
Unmarried	7/126	5.6	7/89	7.9	14/215	6.5
Divorced	21/126	16.7	8/89	9	29/215	13.5
Separated	7/126	5.6	0/89	0	7/215	3.3
Widowed	2/126	1.6	0/89	0	2/215	0.9

Table 2
Clinical characteristics.

Variable	Case reports		Case series		Combined	
	N	%	N	%	N	%
Psychopathology						
Depression	37/127	29.1	31/352	8.8	68/479	14.2
Personality disorder	31/127	24.4	58/352	16.5	89/479	18.6
FDIOS	53/127	41.7	95/352	27	148/479	30.9
Substance/alcohol abuse	20/127	15.8	48/352	31	68/479	14.2
Somatization	5/127	3.9	29/352	13.6	34/479	7.1
Other psychiatric disorder	46/127	36.2	32/352	9.1	78/479	16.3
Self-harm/suicidality	17/127	13.4	24/352	6.8	41/479	8.6
Pathological lying	23/127	18.1	21/352	6	44/479	9.2
Psychosocial factors						
History of foster care	4/309	1.3	13/65	20	17/374	4.6
History of criminal behavior	10/309	3.2	33/125	26.4	43/434	9.9
History of obstetric complications	69/309	22.3	23/82	28	92/391	23.5
History of childhood maltreatment	39/309	12.6	137/277	49.5	176/586	30
History of relationship abuse	20/309	6.5	8/80	10	28/389	7.2

Table 3
Method(s) of abuse and case outcomes.

Variable	Case reports		Case series		Combined	
	N	%	N	%	N	%
Method(s) of abuse						
Fabrication by words	183/309	59.2	82/268	30.6	265/577	45.9
Fabrication by hands: simulation	69/309	22.3	56/268	20.9	125/577	21.7
Fabrication by hands: induction	195/309	63.1	136/268	50.7	331/577	57.4
Fabrication continued during hospitalization	168/309	54.4				
Victim colluded with perpetrator	44/309	14.2				
Case outcomes						
Perpetrator gained financially through victim	20/309	6.5	6/68	8.8	26/377	6.9
Perpetrator caused death of victim	23/309	7.4	4/45	8.9	27/354	7.6
Perpetrator disrupted school attendance of victim	38/309	12.3				
Perpetrator subjected victim to extensive healthcare use	110/309	35.6				

3.1. Demographic characteristics

The mean age of perpetrators at presentation was 27.6 with a range of 37 (max. 53; min. 16) and 97.6% (N = 662/678) were female.

Perpetrators were married in 75.8% of cases (N = 163/215), unmarried in 6.5% (N = 14/215), divorced in 13.5% (N = 29/215), separated in 3.3% (N = 7/215), and widowed in 0.9% (N = 2/215). A healthcare or healthcare-related occupation was described for 45.55% of perpetrators (N = 133/292). The perpetrator was the mother of the victim in 95.58% of cases (N = 648/678) and the father in 1.77% of cases (N = 12/678); in 2.65% of cases (N = 18/678) the perpetrator was related to the victim in another way – e.g. the victim's babysitter.

3.2. Clinical characteristics

Past or current depression was reported in 14.2% of cases (N = 68/479), personality disorder in 18.6% (N = 89/479), FDIOS in 30.9% (N = 148/479), substance/alcohol abuse in 14.2% (N = 68/479), somatization in 7.1% (N = 34/479), self-harm/suicidality in 8.6% (N = 41/479) and pathological lying in 9.2% (N = 44/479). Another psychiatric disorder was reported in 16.3% of cases (N = 78/479) and the absence of any psychopathology was reported in 4.59% (N = 22/479). The most common personality disorder reported was borderline personality disorder.

The perpetrator had a history of foster care in 4.6% of cases (N = 17/374), criminal behavior in 9.9% (N = 43/434), obstetric complications in 23.5% (N = 92/391), childhood maltreatment in 30% (N = 176/586) and relationship abuse in 7.2% (N = 28/389). Examining only individual case reports, we found that the perpetrator's obstetric history was explicitly described by authors in 98 cases. Obstetric complications were described in 70.4% of this sub-sample.

3.3. Method(s) of abuse

Fabrication by words was reported in 45.9% of cases (N = 265/577). *Fabrication by hands* was reported in the form of simulation in 21.7% of cases (N = 125/577) and induction in 57.4% (N = 331/577). Perpetrators frequently adopted multiple methods of abuse. In 54.4% of cases (N = 168/309) the perpetrator continued to fabricate illness in the victim even when they were hospitalized, and in 14.2% of cases (N = 44/309) the victim colluded with the perpetrator.

3.4. Case outcomes

The perpetrator used their victim to gain financially in 6.9% of cases (N = 26/377), disrupted their school attendance in 12.3% (N = 38/309), and submitted them to extensive healthcare use in 35.6% (N = 110/309). The death of the victim was reported in 7.6% of cases (N = 27/354) and in all cases involving the victim's death the perpetrator induced illness.

4. Discussion

Almost all perpetrators of MCA in the reviewed cases were women and the mother of the victim. Meadow (1998) attributed the “appearance” of male perpetrators in the late 1980s to increasing recognition of MCA over time. However, our search process shows that few additional male perpetrators were identified since 1997, even though the number of published cases effectively doubled. It would seem that women are indeed more prone to abuse their children by medical means (see Fraser, 2008; Robins & Sesan, 1991).

A healthcare-related occupation was mentioned in nearly half of the cases. This finding must be treated with caution, as pathological lying was also common. Some perpetrators may have lied about their occupational history to ingratiate themselves with hospital staff. Moreover, health professionals who “go rogue” inevitably gain notoriety – as exemplified by Beverly Allitt, the nurse convicted of the murder of four children on a British pediatric ward (Britain & Clothier, 1994). Authors with these high-profile cases in mind may have been more likely to mention perpetrators' medical careers. However, this would not account for similar results in the case series we reviewed, which mostly used structured assessment methods. We suggest instead simply that caring professions provide another outlet for the ‘exaggerated investment in caring’ observed in perpetrators of MCA (Fraser, 2008, p. 169).

A history of childhood maltreatment was common (30%) and our analysis returned high rates of its associated psychiatric problems: depression (Chapman et al., 2004), substance and alcohol misuse (Dube et al., 2003), suicidality (Dube et al., 2001), self-harm (Weierich & Nock, 2008), and personality disorders (Battle et al., 2004) – particularly borderline personality disorder (MacIntosh, Godbout, & Dubash, 2015). The relationship abuse reported in 7.2% of cases might reflect ‘re-victimization’ in adulthood (Noll, Horowitz, Bonanno, Trickett, & Putnam, 2003). Personality disorders were expected of these perpetrators, as authors have noted similarities between insidious forms of child abuse – for example, poisoning – and deceptive behaviors associated with personality disorders (Bools et al., 1994). Clinicians should keep in mind the significant minority (8.6%) with a history of self-injurious behavior or suicidality, as we encountered more than one case where direct confrontation of the caregiver resulted in a suicide attempt (e.g. Vennemann et al., 2006).

FDIOS was identified in nearly a third of perpetrators, and we found support for Meadow's (1998) claim that: ‘periods of most active fabrication and induction of illness follow sequentially and alternate between perpetrator [and] child’ (p. 216). In a number of cases included in this review, caregivers “escalated” to MCA when they were no longer gratified by FDIOS – for example, when they were discovered by a clinician (e.g. Feldman, Rosenquist, & Bond, 1997). Conversely, Libow (1995) found that perpetrators of MCA were likely to engage in FDIOS behaviour after separation from their victim(s). The children of individuals with FDIOS must be considered at heightened risk of MCA (Bass and Jones, 2011) and may even be at long-term risk of developing FDIOS themselves. Conway and Pond (1995) hypothesized that collusion between victim and perpetrator in MCA may ‘programme a child into developing Munchausen Syndrome’ (p. 504). Other authors have come to this conclusion on the basis of case evidence (Eisendrath, 1996; Rand & Feldman, 2001). The fact that 14.2% of the cases involved victim collusion is therefore concerning. The abnormal illness behaviours seen in MCA families require longitudinal study and may be best understood through a family-systems approach (Bools et al., 1994; Griffith, 1988; Roesler, 2008).

Perpetrators of MCA have been found to be high users of obstetric and gynaecology services (Bass & Jones, 2011). In approximately one quarter of the cases we reviewed, authors mentioned a history of obstetric complications such as miscarriage or preterm delivery. These cases constituted 70.4% of the sub-sample in which the obstetric history of the mother was described. Jureidini (1993) found from an early review of the literature that 70% of abusers reported preterm delivery, antepartum haemorrhage, or emergency caesarean section – well above what would be expected from a sample of predominantly young and Western women. Of course, it may be the case that many obstetric problems reported in the cases we reviewed were factitious or otherwise non-organic in origin. Bass and Jones (2011) found that one in five of their perpetrators had at least one previous episode of pseudocyesis. Feldman and Hamilton (2006) discuss cases of pregnant women inducing antepartum hemorrhage and even labor by using sharp instruments to stimulate bleeding or rupture membranes. In these instances, the motivations were consistent with FDIOS, which was prevalent in the cases we reviewed. Equally, it may be that mother-child relationship is disturbed in cases of MCA by genuine obstetric events known to cause psychological distress. These may include perinatal bereavement, birth trauma, or any obstetric complications perceived by the mother to produce ‘a damaged child’ (Jureidini, 1993, p. 137). Our findings certainly highlight the importance of monitoring women with a history of MCA when they present on obstetric units (Bass & Adshead, 2007).

All victim deaths in our review were the result of caregiver-induced illness, which was described in over half of the cases we examined. This was surprising, as in clinical practice illness induction is far less common than erroneous or exaggerated reporting of

the child's medical history and symptoms. We suspect that publication bias may account for this finding, and it will be discussed as a limitation of our study. Fatality nonetheless occurred in a disturbingly high proportion of cases: 7.6%. The rate we found is slightly higher (+1.6%) than was reported in [Sheridan's \(2003\)](#) review of only MSBP/FDIOA cases. Although less common than most forms of child maltreatment, illness induction seems to be more lethal. Recent national statistics on child maltreatment in the US estimate that only 0.2% of cases result in fatality ([U.S. Department of Health and Human Services, 2017, 2013](#)). Moreover, children must not be considered safe in hospital unless separated from the perpetrator or placed under surveillance ([Vennemann et al., 2005](#)), as in 54.4% of the cases included in this study the abuse continued even when the victim was hospitalized.

One third of caregivers in the reviewed cases subjected their victim(s) to extensive and inappropriate healthcare service use. The limited healthcare utilization observed in the remaining majority was an unexpected finding that should deter clinicians who expect to see "thick-file" or "frequent flyer" signs in MCA. Even so, many perpetrators did "doctor shop" with their child, and repeated hospital admissions were common. In 12.3% of cases we reviewed, clinic visits and inpatient stays interrupted school attendance. It is unlikely that victims were provided with effective home-schooling to compensate for this disruption. We take this to be cause for concern. Chronic absenteeism may undermine children's peer relationships ([Shiu, 2001](#)) and increase the likelihood that they will drop out of school, leading to poor psychosocial outcomes in adulthood ([Kearney, 2008](#)).

[Greiner, Palusci, Keeshin, Kearns, and Sinal \(2013\)](#) used case series data to develop a screening instrument for MCA. Seven of their fifteen items related to the perpetrator of the abuse. Of these, the two variables found to have most predictive value were 'Caregiver has features of Munchausen syndrome' and 'Caregiver has personal history of child abuse' (p. 41–42). [Bass and Jones \(2011\)](#) also identified 'abuse/neglect' and 'current factitious disorder' as strong risk factors for MCA. These recommendations are supported by our findings. Longitudinal studies are required to evaluate whether these factors also have prognostic value, as has been suggested ([Jones & Bools, 1999](#)).

4.1. Strengths and limitations

We systematically reviewed 250 articles and extracted data on 796 perpetrators of MCA – the largest sample of perpetrators assembled to date. Case evidence is currently the best source of information available about MCA, and although our literature search was limited to cases published in the English language, it returned many perpetrators from non-Western backgrounds. Indeed, because we reviewed cases from such a variety of countries, it was not possible to compare our findings to normative data. We could not, for example, compare the high rates of obstetric complications we found to national statistics. Our study was undoubtedly confounded by publication bias similar to the 'file-drawer problem' encountered in meta-analysis ([Rotton, Foos, Van Meek, & Levitt, 1995](#)). Many of the cases we reviewed were written to inform the medical community of a novel presentation of MCA, or an unconventional method for detecting it. Authors were not writing to disseminate "everyday cases" and it is plausible that over time, the cases they chose to share became more "extreme" in nature ([Roesler & Jenny, 2008](#)). This could explain why we report a higher rate of illness induction than [Sheridan \(2003\)](#). However, we do not believe that publication bias would explain the high rate of mortality found in our study, which was only 1.6% above what was reported by [Sheridan \(2003\)](#). We would expect a sharper increase over 14 years of publication if the professional literature was biased towards lethal cases, as has been claimed ([Roesler & Jenny, 2008](#)). [Rosenberg \(1987\)](#) actually reported a mortality rate 1.4% higher than ours in a review conducted thirty years ago.

Our review might also be considered incomplete. Although we investigated clinical factors associated with MCA, we did not investigate the motivation(s) underlying the abuse. We believe that this line of inquiry would be best pursued using qualitative research methods. Finally, our analysis was limited by the data available in case studies, which varied considerably. The rich detail in individual case reports allowed us to investigate at least four variables previously unexplored in published case series of MCA ([Table 3](#)) and uncovered higher rates of gross psychopathology. However, the authors of these case reports were generally not psychiatrists, and would, understandably, focus on the harm done to the child. Psychosocial factors and more subtle psychopathology may have been missed, or omitted in write-up. Authors of larger case series were more likely to be psychiatrists, and most included these variables in their assessment. Combining two sources of data may have skewed results for these variables. For example, [Bass and Jones \(2011\)](#) found high rates of somatization, criminal behavior, and foster care, but combining these results with our case report data led to very low rates overall.

5. Conclusions

Little is known about the perpetrators of MCA, because almost all published studies on MCA focus on the victims and not the abusers. We conducted the first systematic review of MCA case studies focused on perpetrators. Our literature search yielded the largest dataset of perpetrators analyzed to date. Although limited by publication bias, our findings provide the basis for several clinical recommendations and robust future research.

5.1. Clinical recommendations

Clinicians should:

- Consider mothers with a history of FDIOA and/or childhood abuse to be more prone to MCA.
- Be aware that perpetrators may induce illness in children, and that illness induction may be the most lethal form of child maltreatment.

- Not assume that perpetrators will cease the abuse once the victim has been hospitalized.
- Not assume that all cases of MCA will have “thick-files” – i.e. a history of extensive healthcare utilization.
- Exercise caution in confronting perpetrators of MCA, some of whom may have a history of suicide attempts or self-harm.

Funding source

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Acknowledgements

We thank members of the Expert Reference group on FII at the Royal College of Psychiatrists for suggesting the data to extract from research papers: Dr C Acosta, Dr G Adshead, Dr C Fear, Dr D Glaser, Dr M DeJong, and Dr F Gardner. We also thank Dr Marc Feldman.

References

- American Psychiatric Association (2013). *Diagnostic and statistical manual of mental disorders (DSM-5[®])*. American Psychiatric Pub.
- Amlani, A., Grewal, G. S., & Feldman, M. D. (2016). Malingering by proxy: A literature review and current perspectives. *Journal of Forensic Sciences*, 61(S1).
- Bass, C., & Adshead, G. (2007). Fabrication and induction of illness in children: The psychopathology of abuse. *Advances in Psychiatric Treatment*, 13, 169–177.
- Bass, C., & Glaser, D. (2014). Early recognition and management of fabricated or induced illness in children. *The Lancet*, 383(9926), 1412–1421.
- Bass, C., & Jones, D. (2011). Psychopathology of perpetrators of fabricated or induced illness in children: Case series. *The British Journal of Psychiatry*, 199(2), 113–118.
- Bass, C., Acosta, C., Adshead, G., & Byrne, G. (2014). Fabrication and induction of illness in children. *Clinical Topics in Child and Adolescent Psychiatry*, 10–25.
- Battle, C. L., Shea, M. T., Johnson, D. M., Yen, S., Zlotnick, C., Zanarini, M. C., ... McGlashan, T. H. (2004). Childhood maltreatment associated with adult personality disorders: Findings from the Collaborative Longitudinal Personality Disorders Study. *Journal of Personality Disorders*, 18(2), 193–211.
- Bools, C. N., Neale, B. A., & Meadow, S. R. (1993). Follow up of victims of fabricated illness (Munchausen syndrome by proxy). *Archives of Disease in Childhood*, 69(6), 625–630.
- Bools, C., Neale, B., & Meadow, R. (1994). Munchausen syndrome by proxy: A study of psychopathology. *Child Abuse & Neglect*, 18(9), 773–788.
- Britain, G., & Clothier, C. (1994). *The allitt inquiry: Independent inquiry relating to deaths and injuries on the children's ward at Grantham and Kesteven General Hospital during the period February to April 1991*. HM Stationery Office.
- Chapman, D. P., Whitfield, C. L., Felitti, V. J., Dube, S. R., Edwards, V. J., & Anda, R. F. (2004). Adverse childhood experiences and the risk of depressive disorders in adulthood. *Journal of Affective Disorders*, 82(2), 217–225.
- Conway, S. P., & Pond, M. N. (1995). Munchausen syndrome by proxy abuse: A foundation for adult Munchausen syndrome. *Australian & New Zealand Journal of Psychiatry*, 29(3), 504–507.
- Craft, A. W., & Hall, D. M. B. (2004). Munchausen syndrome by proxy and sudden infant death. *BMJ: British Medical Journal*, 328(7451), 1309.
- Denny, S. J., Grant, C. C., & Pinnock, R. (2001). Epidemiology of Munchausen syndrome by proxy in New Zealand. *Journal of Paediatrics and Child Health*, 37(3), 240–243.
- Dershewitz, R., Vestal, B., Maclaren, N. K., & Cornblath, M. (1976). Transient hepatomegaly and hypoglycemia: A consequence of malicious insulin administration. *American Journal of Diseases of Children*, 130(9), 998–999.
- Doughty, K., Rood, C., Patel, A., Thackeray, J. D., & Brink, F. W. (2016). Neurological manifestations of medical child abuse. *Pediatric Neurology*, 54, 22–28.
- Dube, S. R., Anda, R. F., Felitti, V. J., Chapman, D. P., Williamson, D. F., & Giles, W. H. (2001). Childhood abuse, household dysfunction, and the risk of attempted suicide throughout the life span: Findings from the Adverse Childhood Experiences Study. *JAMA*, 286(24), 3089–3096.
- Dube, S. R., Felitti, V. J., Dong, M., Chapman, D. P., Giles, W. H., & Anda, R. F. (2003). Childhood abuse, neglect, and household dysfunction and the risk of illicit drug use: The adverse childhood experiences study. *Pediatrics*, 111(3), 564–572.
- Eisendrath, S. J. (1996). *Current overview of factitious physical disorders. The spectrum of factitious disorders*. Washington/DC: American Psychiatric Press, 21–36.
- Feldman, K. W., Christopher, D. M., & Opheim, K. B. (1989). Munchausen syndrome/bulimia by proxy: Ipecac as a toxin in child abuse. *Child Abuse & Neglect*, 13(2), 257–261.
- Feldman, M. D., Rosenquist, P. B., & Bond, J. P. (1997). Concurrent factitious disorder and factitious disorder by proxy: Double jeopardy. *General Hospital Psychiatry*, 19(1), 24–28.
- Ferrara, P., Vitelli, O., Bottaro, G., Gatto, A., Liberatore, P., Binetti, P., & Stabile, A. (2013). Factitious disorders and Münchausen syndrome: The tip of the iceberg. *Journal of Child Health Care*, 17(4), 366–374.
- Fraser, M. J. (2008). A mother's investment in maintaining illness in her child: A perversion of mothering and of women's role of 'caring'? *Journal of Social Work Practice*, 22(2), 169–180.
- Giurgea, I., Ulinski, T., Touati, G., Sempoux, C., Mochel, F., Brunelle, F., ... de Lonlay, P. (2005). Factitious hyperinsulinism leading to pancreatectomy: Severe forms of Munchausen syndrome by proxy. *Pediatrics*, 116(1), e145–e148.
- Godding, V., & Kruth, M. (1991). Compliance with treatment in asthma and Munchausen syndrome by proxy. *Archives of Disease in Childhood*, 66(8), 956–960.
- Gomila, I., López-Corominas, V., Pellegrini, M., Quesada, L., Miravet, E., Pichini, S., & Barceló, B. (2016). Alimemazine poisoning as evidence of Munchausen syndrome by proxy: A pediatric case report. *Forensic Science International*, 266, e18–e22.
- Greiner, M. V., Palusci, V. J., Keeshin, B. R., Kearns, S. C., & Sinal, S. H. (2013). A preliminary screening instrument for early detection of medical child abuse. *Hospital Pediatrics*, 3(1), 39–44.
- Griffith, J. L. (1988). The family systems of Munchausen syndrome by proxy. *Family Process*, 27(4), 423–437.
- Hall, D. E., Eubanks, L., Meyyazhagan, S., Kenney, R. D., & Johnson, S. C. (2000). Evaluation of covert video surveillance in the diagnosis of Munchausen syndrome by proxy: Lessons from 41 cases. *Pediatrics*, 105(6), 1305–1312.
- Jones, D. P. H., & Bools, C. N. (1999). Factitious illness by proxy. *Recent Advances in Paediatrics*, 17, 57–72.
- Jureidini, J. (1993). Obstetric factitious disorder and Munchausen syndrome by proxy. *The Journal of Nervous and Mental Disease*, 181(2), 135–136.
- Kearney, C. A. (2008). School absenteeism and school refusal behavior in youth: A contemporary review. *Clinical Psychology Review*, 28(3), 451–471.
- Libow, J. A. (1995). Munchausen by proxy victims in adulthood: A first look. *Child Abuse & Neglect*, 19(9), 1131–1142.
- Libow, J. A. (2000). Child and adolescent illness falsification. *Pediatrics*, 105(2), 336–342.
- Light, M. J., & Sheridan, M. S. (1990). Munchausen syndrome by proxy and apnea (MBPA) a survey of Apnea programs. *Clinical Pediatrics*, 29(3), 162–168.
- MacIntosh, H. B., Godbout, N., & Dubash, N. (2015). Borderline personality disorder: Disorder of trauma or personality, a review of the empirical literature. *Canadian Psychology/Psychologie Canadienne*, 56(2), 227.
- Malatack, J. J., Wiener, E. S., Gartner, J. C., Zitelli, B. J., & Brunetti, E. (1985). Munchausen syndrome by proxy: A new complication of central venous catheterization. *Pediatrics*, 75(3), 523–525.
- Mantan, M., Dhingra, D., Gupta, A., & Sethi, G. R. (2015). Acute kidney injury in a child: A case of Munchausen syndrome by proxy. *Saudi Journal of Kidney Diseases and Transplantation*, 26(6), 1279.

- McClure, R. J., Davis, P. M., Meadow, S. R., & Sibert, J. R. (1996). Epidemiology of Munchausen syndrome by proxy, non-accidental poisoning, and non-accidental suffocation. *Archives of Disease in Childhood*, 75(1), 57–61.
- Meadow, R. (1977). Munchausen syndrome by proxy the hinterland of child abuse. *The Lancet*, 310(8033), 343–345.
- Meadow, R. (1998). Munchausen syndrome by proxy abuse perpetrated by men. *Archives of Disease in Childhood*, 78(3), 210–216.
- Moreira, E. C., & Moreira, L. A. (1998). Hypochondriasis by proxy in children: Report of two cases. *Jornal de Pediatria*, 75(5), 373–376.
- Noll, J. G., Horowitz, L. A., Bonanno, G. A., Trickett, P. K., & Putnam, F. W. (2003). Revictimization and self-harm in females who experienced childhood sexual abuse results from a prospective study. *Journal of Interpersonal Violence*, 18(12), 1452–1471.
- Rahilly, P. M. (1991). The pneumographic and medical investigation of infants suffering apparent life threatening episodes. *Journal of Paediatrics and Child Health*, 27(6), 349–353.
- Rand, D. C., & Feldman, M. D. (2001). An explanatory model for Munchausen by proxy abuse. *The International Journal of Psychiatry in Medicine*, 31(2), 113–126.
- Robins, P. M., & Sesan, R. (1991). Munchausen syndrome by proxy: Another women's disorder? *Professional Psychology: Research and Practice*, 22(4), 285.
- Roesler, T. A., & Jenny, C. (2008). *Medical child abuse*. American Academy of Pediatrics.
- Roesler, T. A. (2015). *Medical child abuse/Munchausen by proxy the encyclopedia of clinical psychology*.
- Rosenberg, D. A. (1987). Web of deceit: A literature review of Munchausen syndrome by proxy. *Child Abuse & Neglect*, 11(4), 547–563.
- Rotton, J., Foos, P. W., Van Meek, L., & Levitt, M. (1995). Publication practices and the file drawer problem: A survey of published authors. *Journal of Social Behavior and Personality*, 10(1), 1.
- Scourfield, J. (1995). Anorexia by proxy: Are the children of anorexic mothers an at-risk group? *International Journal of Eating Disorders*, 18(4), 371–374.
- Sheridan, M. S. (2003). The deceit continues: an updated literature review of Munchausen syndrome by proxy. *Child Abuse & Neglect*, 27(4), 431–451.
- Shiu, S. (2001). Issues in the education of students with chronic illness. *International Journal of Disability, Development and Education*, 48(3), 269–281.
- Sigal, M., Gelkopf, M., & Levertov, G. (1990). Medical and legal aspects of the Munchausen by proxy perpetrator. *Medical & Law*, 9, 739.
- Southall, D. P., Plunkett, M. C., Banks, M. W., Falkov, A. F., & Samuels, M. P. (1997). Covert video recordings of life-threatening child abuse: Lessons for child protection. *Pediatrics*, 100(5), 735–760.
- Stirling, J., & Committee on Child Abuse and Neglect (2007). Beyond Munchausen syndrome by proxy: Identification and treatment of child abuse in a medical setting. *Pediatrics*, 119(5), 1026–1030.
- Tsai, H. L., Yang, L. Y., Chin, T. W., Chen, P. H., Yen, H. J., Liu, C. S., ... Chang, J. W. (2012). Child abuse in medical setting presenting as gross hematuria: diagnosis by DNA short tandem repeats. *Pediatrics*, peds–2011.
- U.S. Department of Health and Human Services: Administration for Children & Families (2013). *Child maltreatment*.
- U.S. Department of Health and Human Services: Administration for Children & Families (2017). *Child maltreatment*.
- Vennemann, B., Bajonowski, T., Karger, B., Pfeiffer, H., Köhler, H., & Brinkmann, B. (2005). Suffocation and poisoning—The hard-hitting side of Munchausen syndrome by proxy. *International Journal of Legal Medicine*, 119(2), 98–102.
- Vennemann, B., Perdekamp, M. G., Weinmann, W., Faller-Marquardt, M., Pollak, S., & Brandis, M. (2006). A case of Munchausen syndrome by proxy with subsequent suicide of the mother. *Forensic Science International*, 158(2), 195–199.
- Warner, J. O., & Hathaway, M. J. (1984). Allergic form of Meadow's syndrome (Munchausen by proxy). *Archives of Disease in Childhood*, 59(2), 151–156.
- Weierich, M. R., & Nock, M. K. (2008). Posttraumatic stress symptoms mediate the relation between childhood sexual abuse and nonsuicidal self-injury. *Journal of Consulting and Clinical Psychology*, 76(1), 39.
- Yates, G. P., & Feldman, M. D. (2016). Factitious disorder: A systematic review of 455 cases in the professional literature. *General Hospital Psychiatry*, 41, 20–28.