

Hard to swallow: a systematic review of deliberate foreign body ingestion

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Abstract

Objective: Deliberate foreign body ingestion (DFBI) is often impulsively driven, repetitive and refractory to intervention and frequently necessitates multiple medical interventions. As such, the frustrations among health care providers are great, and the financial toll on health care is significant. Nevertheless, the literature on DFBI is sparse, and suggestions for treatment planning and management are limited. The authors sought to investigate and uncover efficacious treatments and strategies for preventing reoccurrence in DFBI. We build on earlier work by offering both broad and diagnosis-specific management strategies.

Method: A literature review was performed addressing the presentation, management and prevention of reoccurrences of DFBI. Four cases of DFBI are presented illustrating those psychiatric diagnoses (psychosis, malingering, obsessive–compulsive disorder and borderline personality disorder) most frequently encountered in hospital practice. Both broad and specific treatment approaches are presented.

Results: Patients engaging in DFBI are best managed through a multidisciplinary approach, following acute medical management. Successful strategies for the prevention of reoccurrences of DFBI are inconclusive.

Conclusion: Understanding the function of this behavior is critical in developing treatment for patients who engage in these dangerous, potentially life-threatening, self-injurious behaviors. An amalgam of medical, pharmacological and cognitive–behavioral interventions is recommended, as is additional research.

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1. Introduction

As many as 1500 people die annually in the United States as a result of foreign body ingestion (FBI) [1], most of which is thought to occur accidentally [2]. Patient groups at risk of FBI include those intoxicated, those undergoing dental surgery, the visually impaired, young children and infants, and those with bulimia nervosa who accidentally swallow an object that is used to induce vomiting. Conversely, according to a review by Palta et al., deliberate FBI (DFBI) occurs in up to 92% of all adult FBI presentations. Eighty-five percent of these patients have a prior psychiatric diagnosis, and 84% of DFBI presentations occur in patients with prior ingestions

[3]. DFBI incurs substantial health consequences. Although it has been estimated that 90% of foreign objects will eventually pass spontaneously per rectum [4], the risk of injury is serious, and treatments such as endoscopy and/or surgical removal are frequently necessary [5]. Literature on the acute medical and surgical management of FBI is widely available [5,6]; however, there is a relative paucity of literature regarding efficacious long-term psychiatric and psychological management of these patients.

The most recent review on this topic, by Gitlin et al., included four etiologic categories [psychosis, malingering, pica and borderline personality disorder (BPD)] [7]. Pica, where repeated eating of nonnutritive substances occurs in cognitively impaired individuals or as a food replacement in those with normal cognition, is not considered further in this paper as there is ample literature on this diagnostic entity

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[8,9]. Diagnostically, it may be challenging to distinguish pica from obsessive–compulsive disorder (OCD). We surmise that, in physically healthy, nonpregnant and cognitively intact adults, this type of behavior and the psychological relief it provides are best understood as an obsessive–compulsive spectrum disorder. In addition, we will not address the other nonpsychiatric group of smugglers who hide drugs in their gastrointestinal tracts. Gitlin et al. identified treatment of the underlying psychiatric diagnosis in DFBI as crucial and suggested specific management strategies applicable to patients with BPD, including the use of naltrexone, clonidine and dialectical behavior therapy (DBT) [7]. We will focus on both identified evidence-based approaches as well as broad management strategies for use in the consultation–liaison setting. Managing these patients is complex given the demands of integrating care across the relevant disciplines in the context of countertransference feelings evoked by these behaviors. Moreover, the majority of evidence regarding management is taken from single case reports. Larger studies and clinical trials are, unfortunately, absent. Alternatively, extrapolating evidence from research related to other forms of self-injurious behaviors may not be applicable to DFBI; therefore, reducing the risk of reoccurrence is particularly challenging.

In addition to the emotional and physical consequences of this behavior to the patient, these presentations are expensive for our health care system [3,10]. Based on the Ontario Health Insurance Plan schedule of benefits for 2009 and the Ontario Case Costing Initiative (2007–2008), as well as costs related to security personnel involvement with these patients, we estimate that, in Ontario, the average cost per hospital visit, including emergency department (ED) care, day surgery and inpatient admissions, for treatment of DFBI is approximately *\$2305.00 (CAD). Similarly, a 2010 retrospective cost analysis of DFBI by Huang and others estimated an average cost of *\$6616.63 (USD) per DFBI presentation [11]. By comparison, in 2007, according to the Organization for Economic Co-operation and Development (OECD), which compares government health expenditure and services data from more than 30 countries, the per capita (per year) health expenditure in Canada was *\$4139.30 (CAD) [12]. Given that many of these patients have monthly or weekly visits to the ED related to swallowing behavior, it is apparent that the costs of DFBI incurred by Canada's health care system are strikingly disproportionate to other medical and psychiatric presentations.

To illustrate the relevant issues surrounding DFBI in mental illness, we first identify some broad management principles that can be applied in most presentations. Next, four cases related to the most frequent psychiatric diagnoses are presented. A review of the literature related to the psychiatric management and strategies to reduce reoccurrence for each of the diagnostic groups (psychosis, OCD, malingering and BPD) is discussed. Gaps in the literature and areas for further development are also addressed.

2. Method

A comprehensive literature search was conducted on PubMed for articles published between January 1966 and April 2011. The search strategy was limited to English-language studies on humans and used the keywords “foreign body ingestion OR atypical swallowing behavior OR foreign object ingestion OR pica”. The term “pica” was included in order to capture articles that discussed both pica and DFBI. The search strategy yielded 2432 primary articles. Each citation and abstract were reviewed by the primary author (B.P.), and 74 articles of relevance were used for this report. These were then grouped based on psychiatric diagnosis. Specifically, there were 29 articles related to psychosis, 20 articles related to personality disorders or suicide attempts, 14 articles pertaining to OCD and 11 articles related to malingering. The majority of articles found were case reports in medical or surgical journals. Overall, only 15 articles that were obtainable mentioned psychiatric management, the majority of which are case reports. These are listed in Table 1.

A flowchart of our search strategy method is presented in Fig. 1.

3. General management principles

The first general management principle of DFBI in mentally ill patients is to establish a safe environment, which may necessitate the removal of certain proximal objects (including batteries within devices, call bells, and medical or surgical instruments), constant observation and limit setting.

Secondly, the medical or surgical consequences of this episode should be managed emergently when batteries, narcotics packages, or long or sharp objects were ingested. Any patient with symptoms of pain, dysphagia, drooling, respiratory distress or a history of abdominal surgery should be assessed urgently for medical or surgical intervention [6]. Conversely, patients swallowing blunt and/or small objects, patients reporting a remote history of DFBI or the absence of physical symptoms requires less urgent attention. In either case, a medication and substance review should assess for anything that may reduce bowel motility, thus slowing the passage of the object. Psychiatric consultation is recommended when there are specific explicit questions to be addressed, including diagnostic clarification, disposition or the need for an involuntary admission. Swallowing behavior in and of itself is not necessarily of suicidal intent, and waiting for a psychiatric consultation should not delay medical management. The consulting psychiatrist should be aware of the necessity to address the frustrations of the medical or surgical team, whether implicit or explicitly identified. In other words, managing colleagues' countertransference is an integral part of the consultation request.

Table 1

Primary articles describing psychiatric or psychological management of DFBI

Primary author	Year of publication	Article type	Diagnosis	Treatment	Outcome
Beecroft	1998	Case report	Schizophrenia	Cognitive-behavioral therapy, vitamin C	Partially successful
Bhatia	2009	Case report	Depression	Escitalopram, clonazepam, stress management	Successful
Bhattacharjee	2008	Case report	Depression, impulse control disorder	Escitalopram, supportive and interpersonal psychotherapy	Successful
Choure	2006	Case report	Depression	Fluoxetine and psychodynamic psychotherapy	Successful
Fishbain	1983	Case report	Psychosis	Trilafon	Successful
Gitlin	2007	Case series and review	Malingering, psychosis, pica, personality disorders	For PD only: DBT, CBT, supportive therapy, naltrexone, clonidine	Not described
Gundogar	2003	Case series	OCD, pica, trichophagia	Fluoxetine, sertraline	Successful
Hergüner	2008	Case report	OCD, pica	Fluoxetine	Successful
Karp	1991	Case review	Psychosis, major depressive disorder, personality disorders, adjustment disorder	Antipsychotic medications, tricyclic antidepressants, surgery	Not described
Lee	2007	Retrospective chart review	Malingering, personality disorder, schizophrenia	Behavioral modification, improvement of prison environment	Not described
Luiselli	1996	Case report	OCD, developmental disability	Response interruption, prevention, positive reinforcement, “free-food” access	Not successful
Solyom	1991	Case report	Obsessive personality traits, eating disorder	Stress-reducing measures	Successful
Stein	1996	Case series	OCD	SSRI	4 of 5 patients responded
Wadlington	1992	Case report	OCD, mental retardation	Psychotherapy, behavior modification	Not successful
Zeitlin	1995	Case report	OCD	Exposure and response prevention	Successful

DBT, dialectical behavior therapy; CBT, cognitive behavior therapy.

The third management principle is to attempt to reduce the frequency of future swallowing behavior. Psychiatric inpatient admission, by itself, has not been shown to be effective in preventing future DFBI and may even foster regression that leads to escalating swallowing behavior. When there is no other indication for acute psychiatric inpatient treatment, this likely negative outcome has to be explained and discussed with the ED or medical/surgical teams, as nonadmission to psychiatry can be construed (again, in the midst of a countertransference storm) as inadequate care of the patient or a dismissal of the profound impact these patients often have on the nonpsychiatric services, in terms of their efforts, emotions and expense. Preexisting liaison that has established a strong working alliance among teams is, as always, the best context for this communication. If an alternative legitimate goal of admission can be negotiated, (for instance, addressing a housing crisis that precipitated the current DFBI), then brief inpatient stays can be therapeutic. If attempting this, one should contract with the patients that any swallowing on the ward indicates that they are no longer able to engage in the focus of admission, and they will be seen by the appropriate service (GI or general surgery), and management, up to and including discharge, will be determined by the consultant.

Fourth, as alluded to above, managing the inevitable countertransference feelings of the team is required for optimal management of both the acute episode and future recurrences. Feelings of anger, futility, foreboding of recurrence and frustration are common, and it falls to the

psychiatrist to allow these to be voiced, validated and ameliorated. Clinicians should be careful to not automatically withdraw support or terminate treatment as a way of managing strong feelings. Team discussions are crucial to achieve this and are likely most effective in between acute presentations, when countertransference is less intense and more reflective capacity is available.

This leads to the fifth principle of psychiatric management: addressing the wider institutional issues. The liaison role of psychiatry is crucial to ongoing nonconflictual, collaborative management of difficult patients who incite powerful affect in care providers. In our setting, a series of meetings attended by staff and resident physicians as well as nonmedical staff from the departments of emergency medicine, gastroenterology, general surgery, inpatient and consultation-liaison psychiatry and bioethics occurred. This forum allowed a thoughtful approach to planning and disposition, and generated a ‘care plan’ that specified the model of care for patients with DFBI, regardless of which hospital or service they presented to. The process of care, including the conditions under which admission should occur and when consultations are required, was determined during these multidisciplinary meetings. Reference to a preestablished plan has dramatically reduced tension between services and ensures a consistent standard of care for the patients. Anecdotally, resident physicians have taken the plan with them on rotations to other institutions because of its utility. This review refers to the steps outlined in the

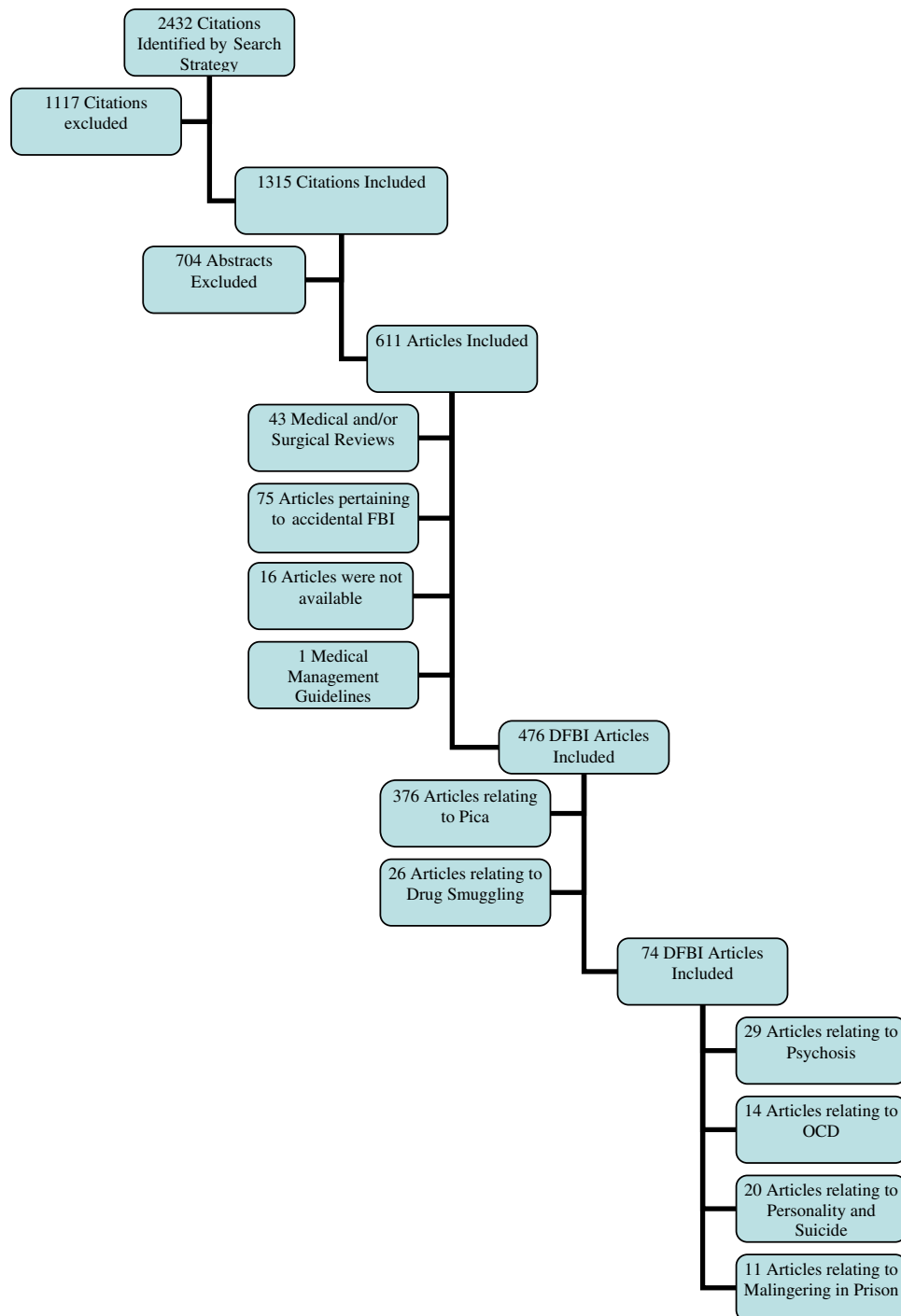


Fig. 1. Search strategy.

multidisciplinary DFBI care plan, and the actual plan itself is available by contacting the primary author.

4. Case reports and diagnostically specific management principles

Examples are drawn from cases that presented to EDs in Canada, the United States and Ethiopia. As the case reports

are brief and contain no identifying data, consent was not sought from the patients.

4.1. Case 1: psychosis

The patient is a young adult male with a diagnosis of schizoaffective disorder. He presented to the ED five times between 2005 and 2009 following ingestion of batteries, coins, a cigarette lighter, paper money and jewelry. The

patient's explanation for his swallowing behavior varied, though he consistently denied suicidal ideation or any prior suicide attempts.

With regard to his selection of ingested objects, the patient reported a range of attributes he believed he gained from each one. He stated that the cigarette lighter allowed him to “be hot, real hot, hotter than fire” and diamond earrings made his body “as strong as diamonds.” He stated that the gold necklace and coins made his body strong and impenetrable, and the paper money allowed him to incorporate the DNA in the fingerprints on the money into his own DNA, also making him more powerful.

4.1.1. Management

Discovering that an event of FBI has occurred can be challenging as psychotic patients are frequently guarded or uncooperative, and may not accurately report their behavior [5,13]. Physical symptoms may be the only clue that swallowing behavior has occurred, and an inability to provide consent can lead to further delays in medical treatment [3]. Thus, obtaining an institutional history for these patients is central to providing consistent care.

Management of these patients can be approached by treating the underlying condition (psychosis) with appropriate medications and concomitantly treating the DFBI with behavioral approaches [14]. With respect to psychopharmacological management, case reports cite the use of both atypical [15] and typical [16] antipsychotics for DFBI in patients with schizophrenia. In terms of psychological management strategies for psychotic patients, behavioral interventions such as overcorrection and teaching of “good” and “bad” swallowing, to connect eating non-edibles with harmful events, have been recommended [17]. Other sources report moderate success with maintaining a constant supply of food items, persuasion and positive reinforcement as well as providing a stress- and confrontation-free environment [14]. Treating the psychosis with comprehensive biological and psychosocial interventions should reduce reoccurrence of FBI when the psychotic processes are determinative of ingestion.

4.2. Case 2: malingering

The patient is a middle-aged male from a local minimum security prison. He was brought to the ED by paramedics with reports of having been seen “eating his mattress” and being verbally aggressive towards the guards. In the ED, the patient stated that he shouldn't have been in jail and that he was tricked by the psychiatrist. He asked to be readmitted to hospital, so as to not have to return to jail.

4.2.1. Management

Countertransference reactions can be intense in cases of malingering due to the perception that one is being manipulated. If the secondary gain can be elicited and empathically understood by health care providers, treating these patients may seem less aversive, and the situation can

be dealt with, while avoiding intense reactions among the treatment team.

Generally, a brief medical intervention to manage the ingestion, with minimal reinforcement of the behavior, followed by an immediate discharge back to prison is the best management [18]. While available literature cites “prevention” such as limiting the availability of objects to swallow as the most effective intervention in this population [18], an environment even in a highly supervised setting cannot be entirely “clean” of potentially dangerous objects.

4.3. Case 3: OCD

A young adult Ethiopian woman presented to the ED reporting severe abdominal distention, pain and constipation. Physical examination was normal apart from lacerations in her oral mucosa. Laboratory investigations were all normal. She revealed to the treating physician that she had been ingesting mud from the walls of her house since childhood. Over the past year, the behavior had escalated to daily occurrences.

The patient reported repeated, intrusive, egodystonic thoughts and images related to the wall, accompanied by increasing anxiety and restlessness prior to her ingestions. After eating a handful of mud, the patient described feeling a sense of relief. The patient reported spending more than 2 h/day either thinking about or eating the mud wall.

4.3.1. Management

Because compulsions are egodystonic, patients are frequently embarrassed discussing such behaviors, so a nonjudgmental stance is critical to diagnosis and therapeutic alliance [19]. Treatment with selective serotonin reuptake inhibitors (SSRIs) is the mainstay of psychopharmacological treatment in this population [20]. Fluoxetine 30–40 mg/day has been effective at reducing DFBI in patients meeting criteria for OCD [20,21]. Other studies indicate that treatment with sertraline [20] or escitalopram [22,23] is also effective. Behavioral therapy such as graded exposure and response prevention techniques [24], and interpersonal and supportive therapies [22] have also been suggested.

4.4. Case 4: personality disorder

A young adult woman diagnosed with BPD was on voluntary admission to a psychiatric hospital for crisis intervention and stabilization. While being transferred between a psychiatric unit to a medical unit for assessment of urinary retention, she asked her accompanying staff, “wanna see a trick?” and then swallowed her mascara. The mascara tube was removed by endoscopy, and the patient was subsequently observed ingesting a half-scissor from a procedure tray. A second endoscopy was unsuccessful at retrieving the scissor. With consultation from the general surgery service, the patient was discharged and referred for outpatient follow-up.

4.4.1. Management

The scant literature on DFBI in personality disordered patients is summarized in the 2007 review of Gitlin et al. [7]. However, acute management strategies are lacking. We have described some of these in the general management principles above, but we have also observed several other issues of relevance to successful management with this group of patients. First, a zero tolerance for swallowing behavior while in care should be communicated to the patient. Second, there is usually a clear precipitant, which can sometimes be elicited if an alliance is established. Typical of borderline pathology, it often involves perceived abandonment or rejection. One should not presume that the act was a suicide attempt. Rather, it may have functioned as an affect regulator and a (albeit self-damaging) means of seeking help. Countertransference is typically strongest with this presentation, so reference to a preestablished, interdisciplinary care plan will be most helpful here to reduce tension between services and ensure a consistent standard of care for the patient. If there is a target for psychiatric inpatient admission other than the DFBI, then admission can be considered, but as earlier noted, admission by itself does not protect from reoccurrence. In terms of pharmacotherapy, naltrexone, clonidine and mood stabilizers have all shown modest benefit in reducing other forms of self-harm behavior in small sample sizes. However, none of these studies focused specifically on DFBI, which may be more resistant to treatment and have a poorer prognosis [7].

The longer-term goal of reducing the frequency of swallowing may be hampered by the chaos in the life of these patients. DBT is perhaps the best established model for managing other self-injurious behavior over time [25], but it does require the motivation to participate in an intense program in a reasonably consistent way. An initial phase of case management is likely required before these patients can engage in the more demanding model of DBT.

5. Conclusion

As demonstrated in this review, DFBI in a psychiatric population typically presents in the context of psychosis, malingering, OCD or personality disorders. Given the differential and varied treatment implications, a thorough psychiatric history is crucial, and consulting psychiatrists must be prudent with their diagnoses and when evaluating and explaining underlying psychopathological reasons for this behavior. Hesitation on the part of the patient to report this self-injurious behavior due to fear or shame, motivations for secondary gain or suicide intent typically leads to worse medical outcomes. Moreover, in some cases, medical procedures may be delayed due to an inability to obtain informed consent.

Key principles of management across all diagnostic considerations and presentations of DFBI in patients with

mental illness include maintaining a safe environment, managing the sequelae of the most recent swallowing episode, attempting to prevent future episodes of DFBI by using pharmacological and psychosocial management strategies and fostering successful collaboration between teams, with active involvement of a consultation–liaison psychiatrist.

The cost of recurrent DFBI in patients carrying psychiatric diagnoses is borne by both the patient and the health care system. Among care providers, intense countertransference reactions can lead to burnout and conflict. Repeated presentations by patients will tax medical resources financially. In order to ensure efficacious and cost-effective care, strategic management at the level of the institution, including the promotion of interdisciplinary care plans, standardized guidelines and active liaison between teams, is paramount. One of our key findings, however, is that the dearth of literature limits understanding of efficacious long-term psychiatric and psychological prevention strategies.

References

- [1] Bloom RR, Nakano PH, Gray SW, Skandalakis JE. Foreign bodies of the gastrointestinal tract. *Am Surg* 1986;52:618–21.
- [2] Pavlidis T, Marakis G, Triantafyllou A, Psarras K, Kontoulis T, Sakantamis A. Management of ingested foreign bodies. How justifiable is a waiting policy? *Surg Laparosc Endosc Percutan Tech* 2008;18(3):286–7.
- [3] Palta R, Sahota A, Bemarki A, Salama P, Simpson N, Laine L. Foreign-body ingestion: characteristics and outcomes in a lower socioeconomic population with predominantly intentional ingestion. *Gastrointest Endosc* 2009;69(31):426–33.
- [4] Smith MT, Wong RKH. Esophageal foreign bodies: types and techniques for removal. *Curr Treat Options Gastroenterol* 2006;9:75–84.
- [5] Gracia C, Frey CF, Bodai BI. Diagnosis and management of ingested foreign bodies: a ten-year experience. *Ann Emerg Med* 1984;13(1):30–4.
- [6] Eisen GM, Baron TH, Dominitz JA, Faigel DO, Goldstein JL, Johanson JF, Mallery JS, Raddawi HM, Vargo JJ, Waring JP, Fanelli RD, Wheeler-Harbaugh J, American Society for Gastrointestinal Endoscopy. Guideline for the management of ingested foreign bodies. *Gastrointest Endosc* 2002;55(7):802–6.
- [7] Gitlin DF, Caplan JP, Rogers MP, Avni-Barron O, Braun I, Barsky AJ. Foreign-body ingestion in patients with personality disorders. *Psychosomatics* 2007;48(2):162–6.
- [8] Goldstein M. Adult pica: a clinical nexus of physiology and psychodynamics. *Psychosomatics* 1998;39(5):465–9.
- [9] Parry-Jones B, Parry-Jones WLL. Pica: symptom or eating disorder? A historical assessment. *Br J Psych* 1992;160:341–54.
- [10] Soong CV, Harvey C, Doherty M. Self-mutilating behavior and deliberate ingestion of foreign bodies. *Ulster Med J* 1990;59(2):213–6.
- [11] Huang BL, Rich HG, Simundson SE, Dhingana MK, Harrington C, Moss SF. Intentional swallowing of foreign bodies is a recurrent and costly problem that rarely causes endoscopy complications. *Clin Gastroenterol Hep* 2010;8(11):941–6.
- [12] OECD health data 2009, June 2009 (www.oecd.org).
- [13] Roark GD, Subramanyam K, Patterson M. Ingested foreign material in mentally disturbed patients. *South Med J* 1983;76(9):1125–7.
- [14] Beecroft N, Bach L, Tunstall N, Howard R. An unusual case of pica. *Int J Geriatr Psychiatry* 1998;13(9):638–41.
- [15] Abraham B, Alao AO. An unusual foreign body ingestion in a schizophrenic patient: case report. *Int J Psychiatry Med* 2005;35(3):313–8.

- [16] Fishbain DA, Rotondo DJ. Foreign body ingestion associated with delusional beliefs. *J Nerv Ment Dis* 1983;171(5):321–2.
- [17] Foxx RM, Martin ED. Treatment of scavenging behavior (coprophagia and pica) by overcorrection. *Behav Res Ther* 1975;13(2–3):153–62.
- [18] Blaho KE, Merigian KS, Winbery SL, Park LJ, Cochrell M. Foreign body ingestion in the emergency department: case reports and review of treatment. *J Emerg Med* 1998;16(1):21–6.
- [19] Choure J, Quinn K, Franco K. Baking-soda pica in an adolescent patient. *Psychosomatics* 2006;47(6):531–2.
- [20] Gundogar D, Demir SB, Eren I. Is pica in the spectrum of obsessive–compulsive disorders? *Gen Hosp Psychiatry* 2003;25(4):293–4.
- [21] Hergüner S, Ozyildirim I, Tanidir C. Is pica an eating disorder or an obsessive–compulsive spectrum disorder? *Prog Neuropsychopharmacol Biol Psychiatry* 2008;32(8):2010–1.
- [22] Bhattacharjee PK, Singh OP. Repeated ingestion of sharp-pointed metallic objects. *Arch Iran Med* 2008;11(5):563–5.
- [23] Bhatia MS, Gupta R. Pica responding to SSRI: an OCD spectrum disorder? *World J Biol Psychiatry* 2009;10(4 Pt 3):936–8.
- [24] Zeitlin SB, Polivy J. Coprophagia as a manifestation of obsessive–compulsive disorder: a case report. *J Behav Ther Exp Psychiatry* 1995;26(1):57–63.
- [25] Linehan MM. Cognitive–behavioral treatment of borderline personality disorder. New York: Guilford; 1993.