

# Association between intentional ingestion of foreign objects and psychiatric disease among prisoners: A retrospective study

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## Abstract

**Introduction:** Intentional ingestion of foreign objects (IIFO) is prevalent among U.S. prisoners. IIFOs often require surgical or endoscopic interventions, extended hospital stays, and may result in significant morbidity or even mortality. Although psychiatric illness is prevalent among prisoners engaging in IIFO, this association remains poorly defined. The aim of this study is to describe the psychiatric illness profile among prisoners diagnosed with IIFO. We hypothesized that repeated episodes of IIFO are associated with an escalating pattern of documented psychiatric illness.

**Methods:** After approvals were obtained from our Institutional Review Board and the Ohio Department of Rehabilitation and Correction, a retrospective study was conducted of prisoners presenting to our facility with IIFO between 2004 and 2011. All historical and concurrent psychiatric diagnoses were abstracted from the medical record and classified into Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition based categories. In addition, medical history, alcohol/drug use, and prior episodes of IIFO were recorded. Statistical analyses included Chi-square and Kruskal-Wallis tests for categorical and continuous data, respectively.

**Results:** We analyzed 136 IIFO episodes involving 27 patients. Repeat IIFO episodes were associated with an increasing number of psychiatric diagnoses. Patients with their fifth or later IIFO had a larger number of psychiatric diagnoses and the number of objects ingested as compared to patients presenting with a first episode ( $P < 0.01$ ). Similarly, patients who went on to present with additional episodes of IIFO during the study had more psychiatric diagnoses identified throughout their visits ( $P < 0.01$ ). The proportion of patients with mood and anxiety disorders (including post-traumatic stress) was progressively greater among prisoners with recurrent episodes of IIFO ( $P < 0.05$ ). Other psychiatric disorders were not significantly associated with IIFO escalation.

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**Conclusions:** We observed a significant association between IIFO recurrences and increases in both the quantity of ingested items and the number of documented psychiatric diagnoses. Of note, psychiatric diagnoses of malingering or secondary gain were not identified in the current patient sample. Consideration of early psychiatric evaluation and intervention in the setting of IIFO, especially recurrent IIFO, is strongly encouraged.

**The following core competencies are addressed in this article:** Medical knowledge, Patient care, Systems-based practice.

**Keywords:** Anxiety disorder, intentional ingestion of foreign objects, mood disorder, prisoner population, psychiatric illness

## INTRODUCTION

Intentional ingestion of foreign objects (IIFO) is disproportionately prevalent among the U.S. prison population.<sup>[1,2]</sup> The phenomenon of IIFO is well described among the noninstitutionalized patients and has been associated with personality disorders and other psychiatric diagnoses.<sup>[3]</sup> In addition, repeat incidents of IIFO are frequently associated with diagnoses of Munchausen's disorder or other factitious disorders.<sup>[4]</sup> IIFO often requires surgical or endoscopic intervention and may be associated with significant resource expenditures, complications, and extended hospital stays.<sup>[1,2,5]</sup>

Because hospitalization may be viewed by some incarcerated individuals as being preferable to remaining in the prison environment, those inflicting harm on themselves may be stereotyped as malingering. This misconception continues to persist despite the fact that psychiatric illness is prevalent in the incarcerated population, with an estimated 45% of federal prisoners, 56% of state prisoners, and 64% of jail inmates having a documented mental health problem.<sup>[6]</sup> To further complicate issues, the phenomenon of self-harm by prisoners tends to be neglected, with little research available regarding the association between mental health and IIFO. While experience treating prisoners with IIFO is plentiful, the topic of mental health in this population failed to attract significant attention from the medical research community. One highly cited study examining psychiatric illness among prisoners presenting with IIFO describes 19 men hospitalized between 1985 and 1988.<sup>[7]</sup> Nationally, there are no contemporary series focusing on mental health issues among prisoners who intentionally ingest foreign objects, with more recent reports concentrating on risk factors and indications for surgical or endoscopic intervention, as well as the associated clinical outcomes.<sup>[1,8,9]</sup> The aim of the

current study is to provide a high-level overview of mental health issues among prisoners presenting with IIFO. We hypothesized that documented psychiatric diagnoses would be increasingly prevalent among patients returning with recurrent episodes of IIFO.

## METHODS

The Ohio State University Medical Center is the sole referral center for the Ohio State penal system, providing nearly all hospital care to prisoners across the state. Before initiating study activities and data collection, required approvals were obtained from both the Institutional Review Board and the Ohio Department of Rehabilitation and Correction. A retrospective review of prison ward admission records between January 1, 2004 and December 31, 2011 was performed to identify inmates presenting with the diagnosis of IIFO. Visits were screened for study inclusion based on International Statistical Classification of Diseases and Related Health Problems-Ninth Revision (ICD-9) codes suggesting ingestion of foreign objects. Specifically, charts evaluated were those with associated ICD-9 codes of 935, 936, 937, and 938, corresponding to foreign bodies in various parts of the gastrointestinal tract. These records were then further examined for inclusion in study-specific data collection and analysis.

Study inclusion criteria were as follows: concurrent incarceration and hospital admission, documented intentional ingestion of at least one foreign object, as well as age  $\geq 18$  and  $\leq 90$  years. Patients were excluded when claimed accidental ingestion of a foreign object was subsequently disproved, if they were treated as an outpatient, if the ingested object was found and retrieved from the oropharynx, if they were pregnant, or if the ingestion was not a presenting complaint (e.g., an asymptomatic foreign object

found on imaging or gastrointestinal endoscopy for an unrelated problem).

In addition to basic demographics (age, gender) and clinical (procedures, complications, admission characteristics) data, concurrent and historical psychiatric diagnoses were abstracted from the chart by physician evaluation of psychiatric records. This information was classified according to Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition-Text Revision (DSM-IVTR) categories of (a) mood disorders; (b) anxiety disorders; (c) attention deficit disorders; (d) substance abuse disorders; (e) psychoses; (f) multiple personality disorders; (g) eating disorders; (h) personality disorders; and (i) general psychological disorders not otherwise specified. Of note, multiple diagnoses within the same category were counted under a single diagnostic entity.

Previous episodes of IIFO, medical history, and history of drug/substance use were elucidated. Finally, the number of identified ingested objects was recorded. Individual patient records were de-identified following the completion of data collection. Analyses were performed to examine differences between individual patients and patient groups based on the IIFO designation (e.g., initial or recurrent episode). Basic group characteristics were presented using descriptive statistics. Statistical comparisons were performed using either the Chi-square test for categorical data or Kruskal-Wallis test for nonparametric continuous data. The study was designed to detect a 20% between-group difference with power ( $1-\beta$ ) of 0.80 and  $\alpha = 0.05$ . A sample size of at least 80 IIFO episodes was required.

## RESULTS

During the study period, 136 documented IIFO events met inclusion criteria. These episodes occurred in 27 patients (4 women, 23 men); individual patients had between 1–27 IIFO-related admissions over the 7-year period. One patient (with 3 IIFO episodes) was excluded from further analyses due to insufficient

information regarding psychiatric evaluation. Individual IIFO episodes featured a wide range and number of objects ingested (1–68, median 2.5). Four patients had a recorded history of IIFO before the study period.

The majority of patients (22/26, 84.6%) were found to have a wide variety of psychiatric diagnoses across all major DSM-IVTR categories [Figure 1]. Of note, only 4/26 (15.4%) patients who underwent formal mental health evaluation had no documented psychiatric diagnosis. Moreover, none of the study patients were diagnosed with malingering or other factitious disorders.

As shown in Table 1, recurrent IIFO episodes were associated with an increasing number of documented psychiatric diagnoses. When compared to patients presenting with the first episode of IIFO, the number of ingested items was significantly greater among prisoners treated for their fifth or later ingestion ( $P < 0.01$ ). Same was noted for the median number of associated mental health disorders ( $P < 0.01$ ).

When looking at the total number of IIFO occurrences per prisoner, individuals with increasing number of accumulated episodes of ingestion during the study period were noted to have more psychiatric diagnoses as the total number of IIFO-related visits grew ( $P < 0.01$ ). However, the average number of objects ingested was not significantly different when examined in the context of the total number of recorded IIFO events [Table 1]. This suggests that the escalating number of ingested objects was most likely attributable to a more severely affected subgroup of patients. As these patients presented time after time, the character of IIFO episodes evolved correspondingly.

The proportion of patients with mood and anxiety disorders (including posttraumatic stress) progressively increased with escalating IIFO pattern [ $P < 0.05$ , Figure 2]. Other psychiatric diagnoses, including psychoses, personality disorders, eating disorders,

**Table 1: Association between increasing number of IIFOs and (a) the recorded number of psychiatric diagnoses; (b) number of items ingested per episode**

IIFO episode number	First	Second	Third	Fourth	Fifth and subsequent	P
Number of psychiatric diagnoses	1 (0-4)	1 (0-4)	1.5 (0-4)	3 (1-4)	3 (2-4)	<0.001
Number of items ingested	1 (1-7)	2 (1-8)	2 (1-5)	2 (1-7)	4 (1-68)	<0.001
<b>Total IIFO episodes</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5+</b>	
Number of psychiatric diagnoses	1 (0-1)	1 (1-4)	1 (0-3)	2 (2-2)	3 (2-4)	0.004
Average items ingested per episode	1 (1-4)	3 (1-3)	1.5 (1-3)	2.5 (2.5-2.5)	3.5 (1.5-7.5)	NS

Numbers are median (IQR). P values are determined using a Kruskal-Wallis test. NS=Not significant, IQR=Interquartile range, IIFO=Intentional ingestion of foreign objects

and substance abuse disorders were not significantly associated with recurrent IIFO episodes [Table 2].

## DISCUSSION

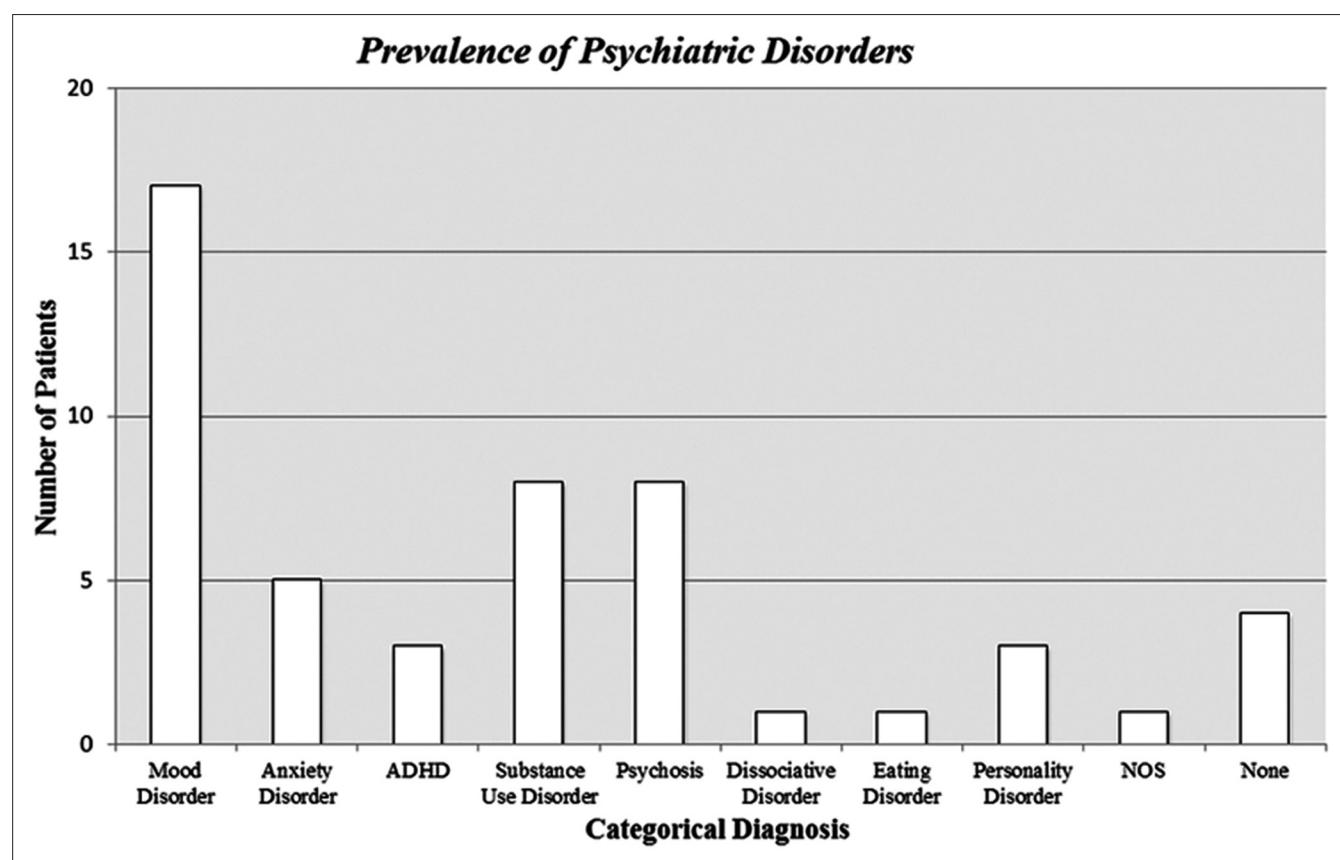
This is the first study to demonstrate a pattern of clinical escalation among prisoners who present with recurrent episodes of IIFO. This pattern may correlate with mental health issues, both in terms of quantifiable increase in documented psychiatric diagnoses and disproportionate presence of mood and anxiety disorders. The prevalence of psychiatric diagnoses

among prisoners is very high, with anywhere between 45-64% of incarcerated individuals estimated to have "any mental health problem" and 14–24% experiencing "recent history of mental health issues".<sup>[6]</sup> However, the specifics of the Bureau of Justice statistics, especially in terms of differences between Axis I and II diagnoses, lack granularity.<sup>[6]</sup> Similarly uncertain is the inclusion of learning disabilities, developmental delays, as well as the self-injurious behavior itself among various reported mental health problems. Psychiatric diagnoses previously identified among patients presenting with IIFO include psychosis,

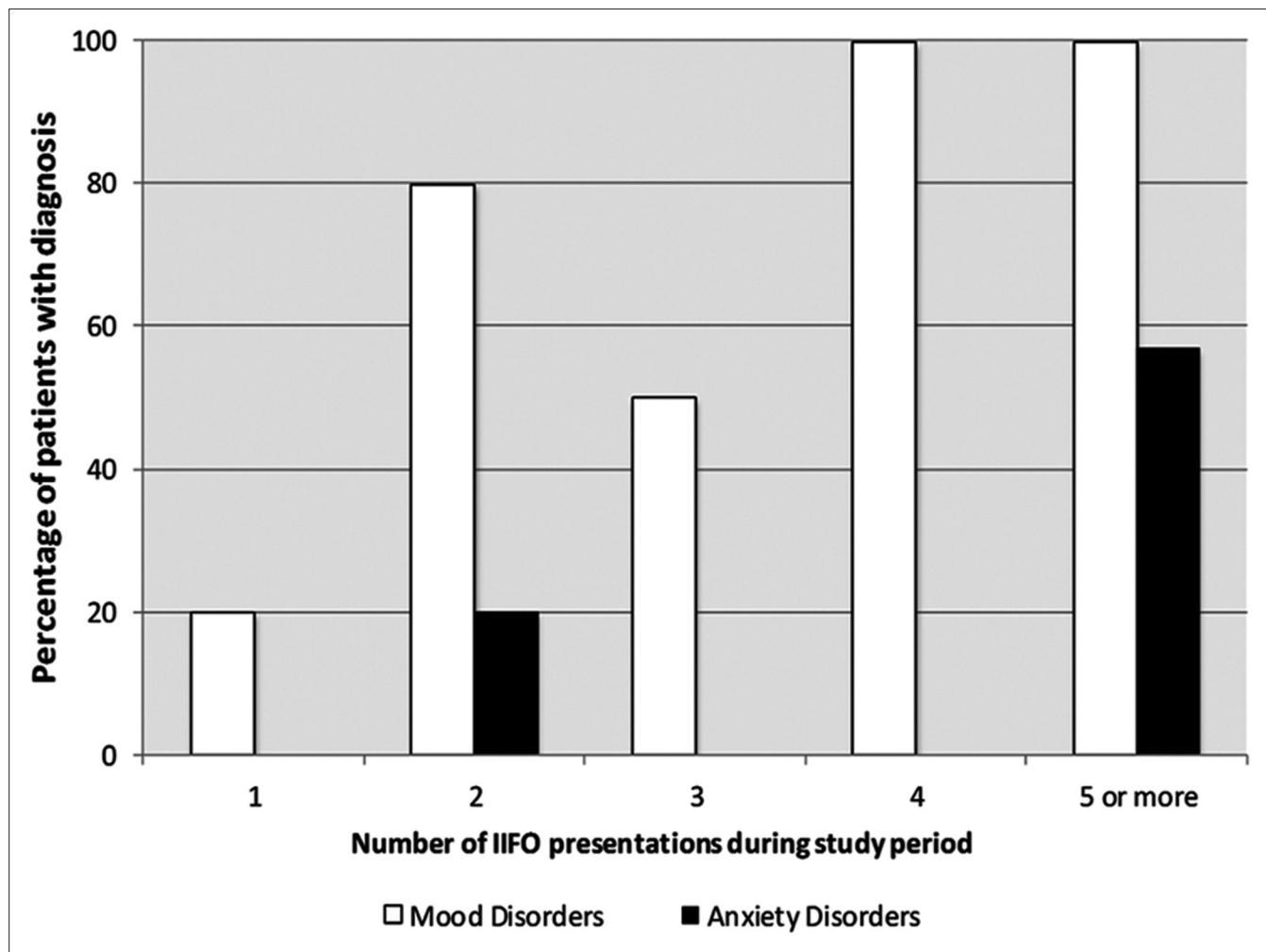
**Table 2: Association between the IIFO episode number and the frequency of individual psychiatric diagnoses**

Number of patients with diagnosis (% total)	Patient's IIFO episode number					P
	First (n=5)	Second (n=5)	Third (n=8)	Fourth (n=1)	Fifth+ (n=7)	
Mood disorder	1 (20)	4 (80)	4 (50)	1 (100)	7 (100)	0.039
Anxiety disorder	0 (0)	1 (20)	0 (0)	0 (0)	4 (57)	0.044
Attention deficit disorder	0 (0)	0 (0)	1 (25)	1 (100)	1 (13)	NS
Substance abuse	1 (20)	1 (20)	1 (13)	1 (100)	4 (50)	NS
Psychosis	1 (20)	2 (40)	2 (25)	0 (0)	3 (38)	NS
Multiple personality disorder	0 (0)	0 (0)	0 (0)	0 (0)	1 (13)	NS
Eating disorder	0 (0)	1 (20)	0 (0)	0 (0)	0 (0)	NS
Personality disorder	0 (0)	1 (20)	0 (0)	0 (0)	2 (25)	NS
NOS	0 (0)	0 (0)	1 (13)	0 (0)	0 (0)	NS

P values are calculated using a Chi-square test. NS=Not significant, P>0.05; NOS=Psychiatric disorder not otherwise specified, IIFO=Intentional ingestion of foreign objects



**Figure 1:** Histogram showing the number of patients with documented psychiatric disorders, grouped by diagnostic category. Note that total number of recorded items exceeds total number of patients, as substantial proportion of patients had more than one documented diagnosis. Only four of the 26 patients had no documented psychiatric diagnosis



**Figure 2:** Prevalence of mood and anxiety disorders among prisoners who experienced a given number of episodes of intentional ingestion of foreign object. Patients were considered to have a particular psychiatric diagnosis if any of their visits documented the said mental health disorder

malingering, obsessive-compulsive disorder, mood disorders, anxiety disorders, and borderline personality disorder.<sup>[9-11]</sup>

Although the incidence of intentional self-harm, and IIFO specifically, is very difficult to accurately estimate, one survey suggests that self-injury occurs in approximately 2% of the U.S. prison population.<sup>[12]</sup> Our findings are generally consistent with those of previous investigations. For example, Huang, *et al.*<sup>[13]</sup> reported a high prevalence of mood (61%) and anxiety disorders (12%) among patients presenting with IIFO. Other investigators also noted an association between self-harming behavior in male prisoners and mood disorders.<sup>[14]</sup> Similar to Maden, *et al.*,<sup>[15]</sup> the current report suggests that self-injurious patterns are more likely to be a symptom of long-term mental health problems as opposed to short-term environmental stresses. Lack of high quality clinical evidence is clearly a major barrier to better understanding of the problem

of self-harm among prisoners. As previously stated, most research into psychiatric illness among inmates presenting with IIFO is limited to small case series, case reports, and vignettes.<sup>[11,12,15]</sup> One notable study from the 1980s described IIFO events involving 19 prisoners, finding that 80% had concurrent mental health problems.<sup>[17]</sup> The authors did not, however, focus on recurrence or escalation patterns, and attributed the majority of IIFO episodes to psychosis with command hallucinations.<sup>[7]</sup>

Because the problem of IIFO is a complex and multifaceted one, encompassing both mental health and physical considerations,<sup>[10,11,14]</sup> the optimal approach to each case of IIFO, regardless of whether the patient is a prison inmate or not, should consist of an individualized, multidisciplinary approach that incorporates mental health professionals and fosters early intervention.<sup>[4,14,16,17]</sup> Although not supported by findings from the current study, it is

not uncommon for health-care providers to view IIFO among incarcerated patients as being associated with malingering and secondary gain, with published recommendations advocating “limit(ing) secondary gain” and the “return (of patients) to their usual environment” as soon as possible.<sup>[14]</sup> Such simplistic approach to a very complex problem essentially precludes the effective implementation of various early interventions and preventive measures to reduce any future self-harm and IIFO episodes. Although targeted interventions to address the general phenomenon of self-injury may be possible, literature suggests that population-based strategies are more likely to be effective at this time.<sup>[18,19]</sup> Of note, ethnic and cultural factors may play a role in the overall “self-harm equation” among prisoners, further elevating the complexity of this poorly understood problem.<sup>[15]</sup> Another potential strategy to reduce recurrent self-injury involves education to enhance prisoners’ coping skills – a more general approach that may also be of benefit to other domains of the penal system.<sup>[20]</sup>

The current study is limited by its retrospective nature and biases inherent to such methodological approach. More specifically, there is likely some degree of attrition bias as the study cohort transitions from an “early” sample that includes all IIFO cases to a “late” sample that primarily includes patients with repeated IIFO ingestions. Another major weakness of the study is the lack of standardized data regarding psychiatric diagnoses, resulting in potential underestimation of the magnitude of mental health issues during initial/early IIFO encounters for this study cohort. Consequently, our observation that psychiatric issues tend to “escalate” with repeated foreign object ingestions may also reflect greater ability to “capture” additional psychiatric diagnoses on subsequent IIFO-related readmissions. Strengths of this study include the relatively large number of IIFO episodes examined, good quality of electronic medical records available for review, and the focus on temporal trends versus more traditionally “static” examinations of the problem.

## CONCLUSIONS

This study describes a significant relationship between recurrent IIFO episodes and the increasing number of specific psychiatric diagnoses (anxiety and mood disorders). Likewise, an escalating

number of ingested items was associated with repeated IIFO presentations. Of importance, the presence of malingering or secondary gain was not documented among patients in this study. Consideration of early psychiatric intervention in the setting of IIFO, especially when dealing with recurrent ingestions, is strongly encouraged. Due to potential biases, findings of the current study should be considered preliminary and require independent validation.

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## Conflicts of interest

There are no conflicts of interest.

## REFERENCES

- Dalal PP, Otey AJ, McGonagle EA, Whitmill ML, Levine EJ, McKimmie RL, et al. Intentional foreign object ingestions: Need for endoscopy and surgery. *J Surg Res* 2013;184:145-9.
- Evans DC, Wojda TR, Jones CD, Otey AJ, Stawicki SP. Intentional ingestions of foreign objects among prisoners: A review. *World J Gastrointest Endosc* 2015;7:162-8.
- Li ZS, Sun ZX, Zou DW, Xu GM, Wu RP, Liao Z. Endoscopic management of foreign bodies in the upper-GI tract: Experience with 1088 cases in China. *Gastrointest Endosc* 2006;64:485-92.
- Palese C, Al-Kawas FH. Repeat intentional foreign body ingestion: The importance of a multidisciplinary approach. *Gastroenterol Hepatol (N Y)* 2012;8:485-6.
- Otey JA, Houser JS, Jones C, Evans DC, Dalal PP, Whitmill ML, et al. Examination of financial charges associated with intentional foreign body ingestions by prisoners: A pattern of escalation. *OPUS 12 Scientist* 2014;8:6-8.
- James DJ, Glaze LE. Mental Health Problems of Prison and Jail Inmates. Washington, D.C.: Bureau of Justice Statistics; 2006.
- Karp JG, Whitman L, Convit A. Intentional ingestion of foreign objects by male prison inmates. *Hosp Community Psychiatry* 1991;42:533-5.
- Weiland ST, Schurr MJ. Conservative management of ingested foreign bodies. *J Gastrointest Surg* 2002;6:496-500.
- Bisharat M, O'Donnell ME, Gibson N, Mitchell M, Refsum SR, Carey PD, et al. Foreign body ingestion in prisoners – The Belfast experience. *Ulster Med J* 2008;77:110-4.
- Poynter BA, Hunter JJ, Coverdale JH, Kempinsky CA. Hard to swallow: A systematic review of deliberate foreign body ingestion. *Gen Hosp Psychiatry* 2011;33:518-24.
- Gitlin DF, Caplan JP, Rogers MP, Avni-Barron O, Braun I, Barsky AJ. Foreign-body ingestion in patients with personality disorders. *Psychosomatics* 2007;48:162-6.

12. Klein CA. Intentional ingestion and insertion of foreign objects: A forensic perspective. *J Am Acad Psychiatry Law* 2012;40:119-26.
13. 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*. *Clinical Gastroenterology and Hepatology*, 2010;11:941-946.
14. Lanes E. Identification of risk factors for self-injurious behavior in male prisoners. *J Forensic Sci* 2009;54:692-8.
15. Maden A, Chamberlain S, Gunn J. Deliberate self-harm in sentenced male prisoners in England and Wales: Some ethnic factors. *Crim Behav Ment Health* 2000;10:199.
16. Kienzle A, Warner V. Intentional foreign body ingestion: What do we know and how can we help? *Nursing* 2016;46:23-4.
17. Malik AM. Deliberate ingestion of stones causing a diagnostic dilemma. A personal experience. *Int J Health Sci (Qassim)* 2015;9:83-6.
18. Owens D, Horrocks J, House A. Fatal and non-fatal repetition of self-harm. Systematic review. *Br J Psychiatry* 2002;181:193-9.
19. Byford S, Knapp M, Greenshields J, Ukoumunne OC, Jones V, Thompson S, et al. Cost-effectiveness of brief cognitive behaviour therapy versus treatment as usual in recurrent deliberate self-harm: A decision-making approach. *Psychol Med* 2003;33:977-86.
20. Dear GE. Preventing suicide and other self-harm in prison. Basingstoke, New York: Palgrave Macmillan; 2006. pp. 177-187.